THE
GARDEN OF GOURDS

WITH DECORATIONS

By

L. H. BAILEY

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THE GARDEN OF GOURDS

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THE TEXT

PAGE

Cucurbita Pepo, and the *Yellow-flowered Gourds* 31
Cucurbita texana 42
1. Cucurbita Pepo var. ovifera 51
2. Cucurbita.—Peten gourd 60
3. Cucurbita okeechobeensis 61
4. Cucurbita fœtidissima 65
5. Cucurbita maxima var. turbaniformis 66
6. Cucurbita ficifolia 71
7. Cucumis Melo varieties 72
8. Cucumis Anguria 89
9. Cucumis dipsaceus 90
10. Lagenaria siceraria 91
11, 12. Luffa, the Vegetable Sponges 107
13. Trichosanthes Anguina 111
14. Benincasa hispida 115
15, 16. Momordica Charantia and M. Balsamina 116
17. Momordica cochinchinensis 121
18, 19. Cyclantheras 122
20. Ecballium Elaterium 131

THE FORTY-TWO PLATES

PAGE

Frontispiece. The Spoon and Bicolor Pear gourds.
Gourds of centuries ago 3
The wild Texan gourd 5
The common Egg gourd 7
The Egg gourd 11
The Apple gourd 13
The Apple gourd 17
The standard Mock Orange gourd 19
The Bell gourd 25
The Big Bell gourd 29
White Pear gourd 33

PAGE

Pear-like gourds 37
The Spoon gourd 39
Miniature gourd 43
The Broad Striped gourd 45
Broad Striped gourd; and a squash 49
The Ladle gourd 53
Warty Hardhead gourd 57
The Peten gourd 61
Native Okeechobee gourd 63
The native Calabazilla 67
Turkscap gourd 69
Malabar gourd 73, 75
The fragrant Dudaim 79
The Chito gourd or melon 83
The Snake cucumber or melon 85
Various forms of Cucumis 87
The items in Lagenaria 93, 95, 97
Kinds of Luffa 101, 103, 105
The Serpent gourd 109
Wax gourd 113
Balsam-Pear 117
Balsam-Apple 119
Cochinchina gourd 123
The Cyclantheras 125
Squirting cucumber 127
Odds: Cucurbita Pepo (Finger gourd). Lagenaria (Maranka or Dolphin gourd) 131

THE GARDEN OF GOURDS

THE GARDEN OF GOURDS

It is the first day of October. Summer birds are gone. Frosts have signalled for winter. All tender vegetables are harvested from the garden. Marigolds and zinnias and a few other rugged things still retain the glow of warm weather, yet autumn chill is in the air, new colors are on the hills, dead leaves begin to cover the grass. It is plain we approach a great event in the progress of the year, when products and ambitions will be housed and we shall settle down to the hopeful routines of winter. Most persons will cease to regard the landscape and they will seldom go to the garden or follow the lines of the brook.

Yet even now the gourds hang on the trellises, and although blossoms are mostly gone and leaves have passed their prime, the bright green-and-yellow striped fruits in comely attractive form ask for attention. Probably in every year since my youth —and that was long ago—I have grown gourds of one kind or another and sometimes of many kinds. I have made an herbarium collection of them, for record, including foliage and flowers; and many fruits lie in boxes. I cannot remember when I did not know them. For time beyond recollection I have wanted to write a simple book about the gourds; my technical and scientific writings on the Cucurbits began nearly fifty years ago; and now, as the years are ripe, I wish to express my joy in the experiences.

Once the gourds were common objects in homes, then other blooms and fruits displaced them, and now they are back again in a new vogue of popular favor, but for myself the interest in them has never lagged. They are so shapely and so colorful, so strange in their markings, so endlessly unlike each other, so durable in winter months, so apparently unrelated to the vines

that bear them, and yet so simple to grow, that they hold the interest tenaciously.

The present interest in gourds is well attested by the organizing of the International Gourd Society, headquartering in California. Semi-annually it publishes a Gourd Bulletin.

These gourds that hang so handsomely on their vines today are of the yellow-flowered kind, from two of which the colored frontispiece of this book is painted. Seeds of them were planted in the open ground on June 12th, 1936, which is about three weeks later than usual practice for Ithaca, New York. The season was dry and hot; no special attention was given except that the soil was warm mellow and fertile, and exposure was to full sun. In ten days to two weeks the seeds had begun to germinate. In about a month the plants had started to make four to six small true leaves but showed no sign of running and bore no flowers. In early August the plants were beginning to climb and a few staminate or male flowers had appeared. The middle of September the vines were all over the wire trellis and colorful gourds were in the wind.

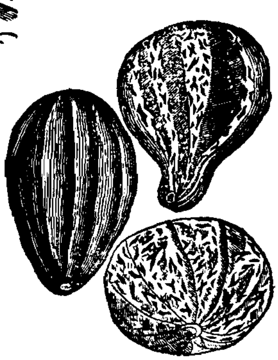
Advantage of the gourds as garden plants is the fact that in North America they require no fussing care. Persons who drench and sprinkle them may see the fruits fail or drop and perhaps have mildew spread over the vines. Apparently the plants this year bore as profusely and about as early as those customarily started late in May. Gourds are heat-loving plants and they do not profit by being so far advanced that "slow" weather overtakes them. At both ends of the season they are killed by frost. They are warm season plants. They are annuals; or if some of them are perennial, they are treated as if annual in northern regions.

The plants perish with the first good frosts of autumn; then the old vines are pulled from the trellises or out of the bushes, all the ripe hard gourds are harvested if not already picked, and the brilliant shapely fruits carry the three summer months

PRE-LINNAEAN GOURDS

PYRIFORMIS
LOBEL 1576

PEPO INDICUS
TABERNAEMONTANUS
1664

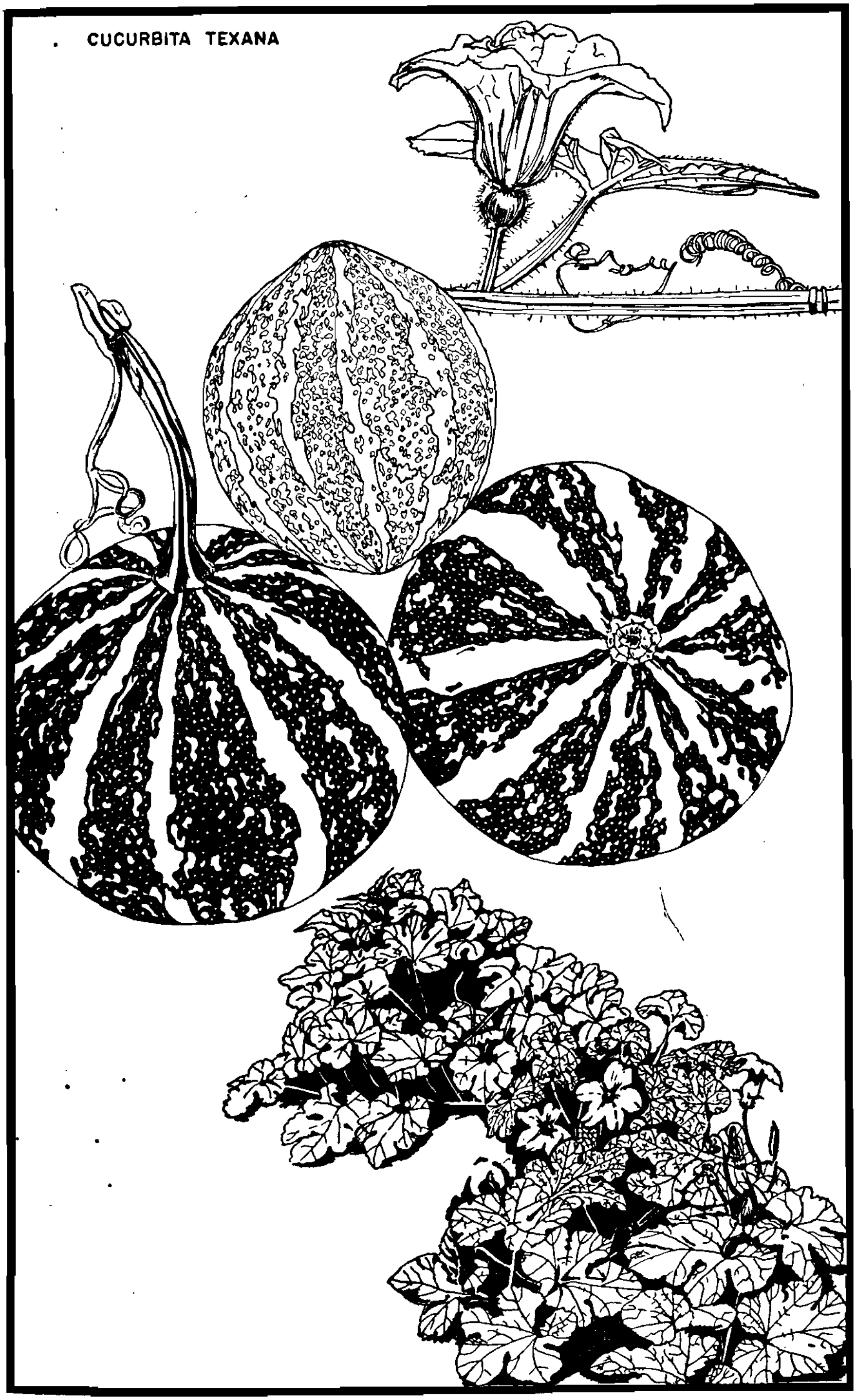


CUCURBITAE INDICAE
PARKINSON 1640

LAGENARIA
LOBEL 1576

LAGENARIA
MATTHIOLUS 1586

GOURDS OF CENTURIES AGO



THE WILD TEXAN GOURD

THE COMMON EGG GOURD

through to the holidays and beyond. One is impressed that here is a real harvest, and it is distinctly unlike the usual autumnal produce and flowers.

Gourds are excellent subjects for home decoration as well as for exhibitions in schools and fairs. Before me is the program of a flower-show in which an "educational gourd exhibition" is a feature. This program covers two pages, including correlations with art, nature-study, literature and handicrafts. There is wide opportunity, in such an assembly of material, for design and color effects. Often the gourds, when not naturally colored (as the Lagenarias) are painted and decorated by hand, the inside having been removed and the shell thoroughly dried and cured. Sometimes the gourds are partially carved or trimmed.

On the subject of arrangement, Helen M. Tillinghast writes in her "First Gourd Book" as follows: "Pottery, old pewter plates, copper trays, baskets, wooden chopping bowls can be used for containers. As to grouping, it is well to remember that a smooth gourd emphasizes the charm of a warted one, a white or plain yellow relieves the monotony of too many stripes or splashes of different markings."

In the residence, baskets of gourds of different shapes and colors are striking articles of ornament, never failing to interest visitors. They may be used singly in plans of decoration. Florists make up clusters of them in hanging designs, using nuts and other autumnal objects among them.

Colors of the brilliant yellow-flowered gourds are not permanent although they last well until Christmas or beyond as a rule: The gourds should not be harvested until ripe and fully colored, when the shell is hard, and then they are dried. If stored in a closely confined space or in a moist place they are likely to decay or at least to develop sunken moldy spots. As I read the proofs on this book in the early part of January, 1937, a goodly company of gourds is before me, the colors still bright and the varying shapes most attractive.

In preparation for decorative uses the gourds should be

cleaned and softly polished, then rubbed with a good floor wax. Some users varnish them, but this adds an unnatural and too prominent gloss. The fruits should be dry when wax or other covering is applied.

Yet, the primary interest in gourds should be that of the gardener and the horticulturist. They may have a definite place, associated with seasons and birds and gardening labor. The germination will be interesting, with the way in which they pull themselves out of the seed-coat hood and then straighten themselves to the sky; the rapid continuous growth is reassuring; blossoms of the two separate kinds are stimulating; and there is never-ceasing satisfaction in the forthright development of the fruits. It is usually my practice to grow the different kinds in separate parts of the garden as far as possible, and I find myself going from one planting to the other to make comparisons in progress; and although I have known them for so many seasons I never cease to wonder at the shapes and colors.

Stature of the plants is usually at least as much as ten to fifteen feet in direct length, with many side branches. In the white-flowered gourds and some of the less frequent yellow-flowered kinds the plants may run straight away to fifty and even one hundred feet or more. Therefore, plenty of room is required, particularly if the plants are to run on the ground. The common yellow-flowered kinds should be kept off the ground, however, so the colored fruits may always be clean. A woven wire fence at least head high is good support for them, or they may be grown to cover a pile of brush. Sometimes they are allowed to go on trees or bushes, but usually in such situations the ground is only partially habitable by the gourd roots and prime results are not to be expected. If vigorous growth is wanted for covering a screen, care should be exercised to provide mellow and fertile soil. Best results are to be expected when they are grown by themselves along a fence-trellis provided for the purpose. In such a row the hills may stand five to eight feet apart.

THE EGG GOURD

THE APPLE GOURD

It is well to start with several plants in a hill to insure against loss by insects and accidents. When true leaves are beginning to form rapidly, the hill may be reduced to two or three plants. Commonly there is not much danger from diseases, but both the striped and the spotted cucumber beetles may take off the young plants and they are a serious menace in carrying wilt disease to cucumber and melon plants. Methods of combating these insects are likely to change with new studies, so the grower should keep track of recent advice. At present, a dust of calcium arsenate and gypsum, 1 part to 15 or 20, is a standard remedy. Hills may be protected by wire or cheesecloth covers, or manufactured devices, care being taken to see that no openings are left at the bottom through which insects may crawl. Proper covers for hills also aid greatly in forwarding the plants and in obtaining earlier fruiting.

The flea-beetle is best controlled, probably, by rotenone dust, which may be purchased of dealers in garden supplies.

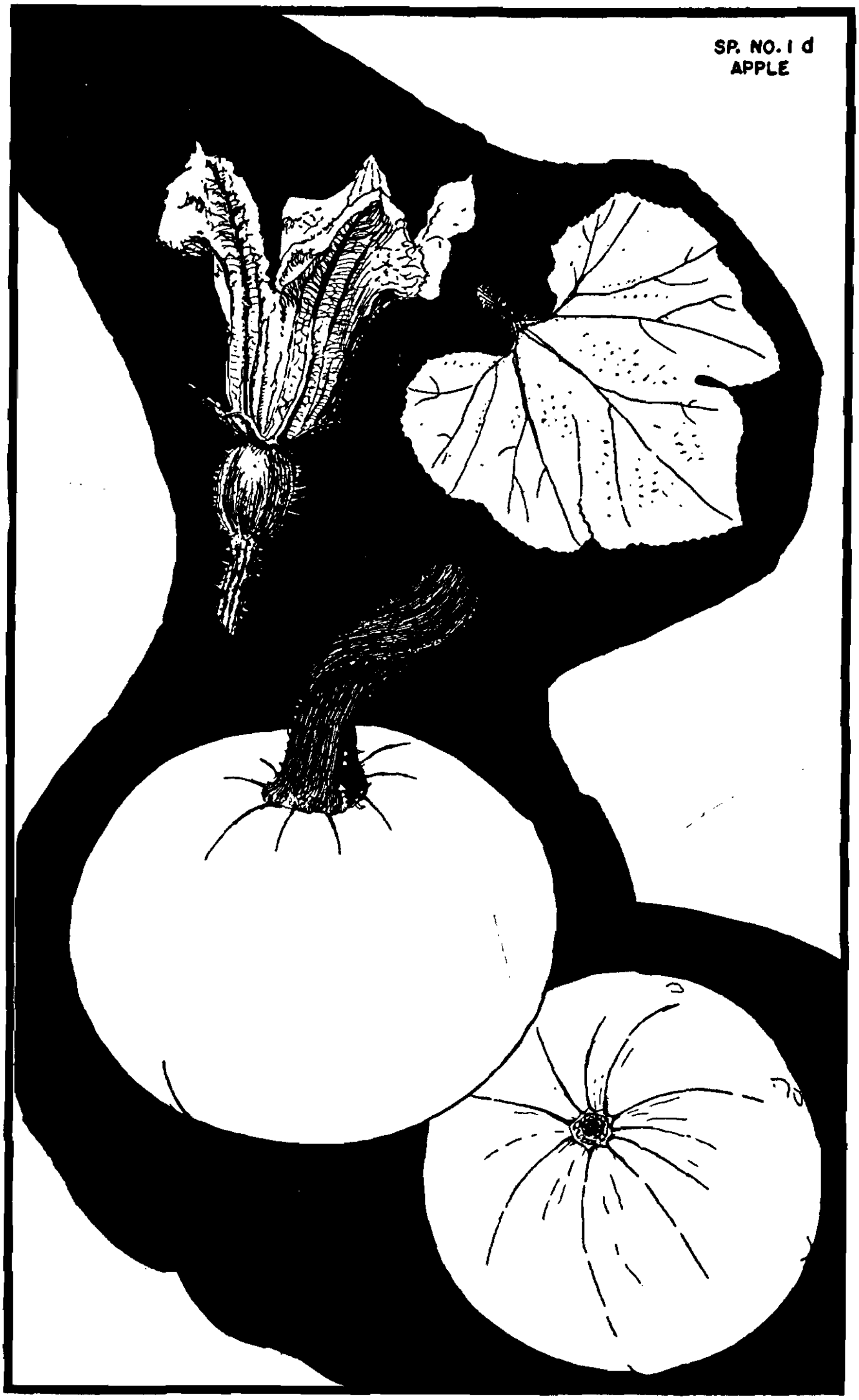
The gourds are so simple to raise that little horticultural advice is needed. Therefore this book naturally concerns itself with the different kinds; and even then we shall not discover them all. Nor is it intended in this book to describe all the utilities of these fruits in households and in the arts and trades, although the subject is worthy careful attention.

Before passing to the kinds, however, we may pause to discuss the markings. To the casual observer the stripes or ridges on the fruits may seem to be without regular order or number. Yet the alternating lengthwise bands are ten, although this number may be obscured now and then by accidents or failures in development. The internal fruiting structure is on the plan of three, as seen in the schematic diagram D in picture Species 1, *j*, and one can make it out in the cross-section of Species 6. The three cells or carpels each contains two groups of seeds, as may be readily observed when a young fruit is cut across. As the fruit grows, the interior divisions break down and there may appear only a central cavity with a

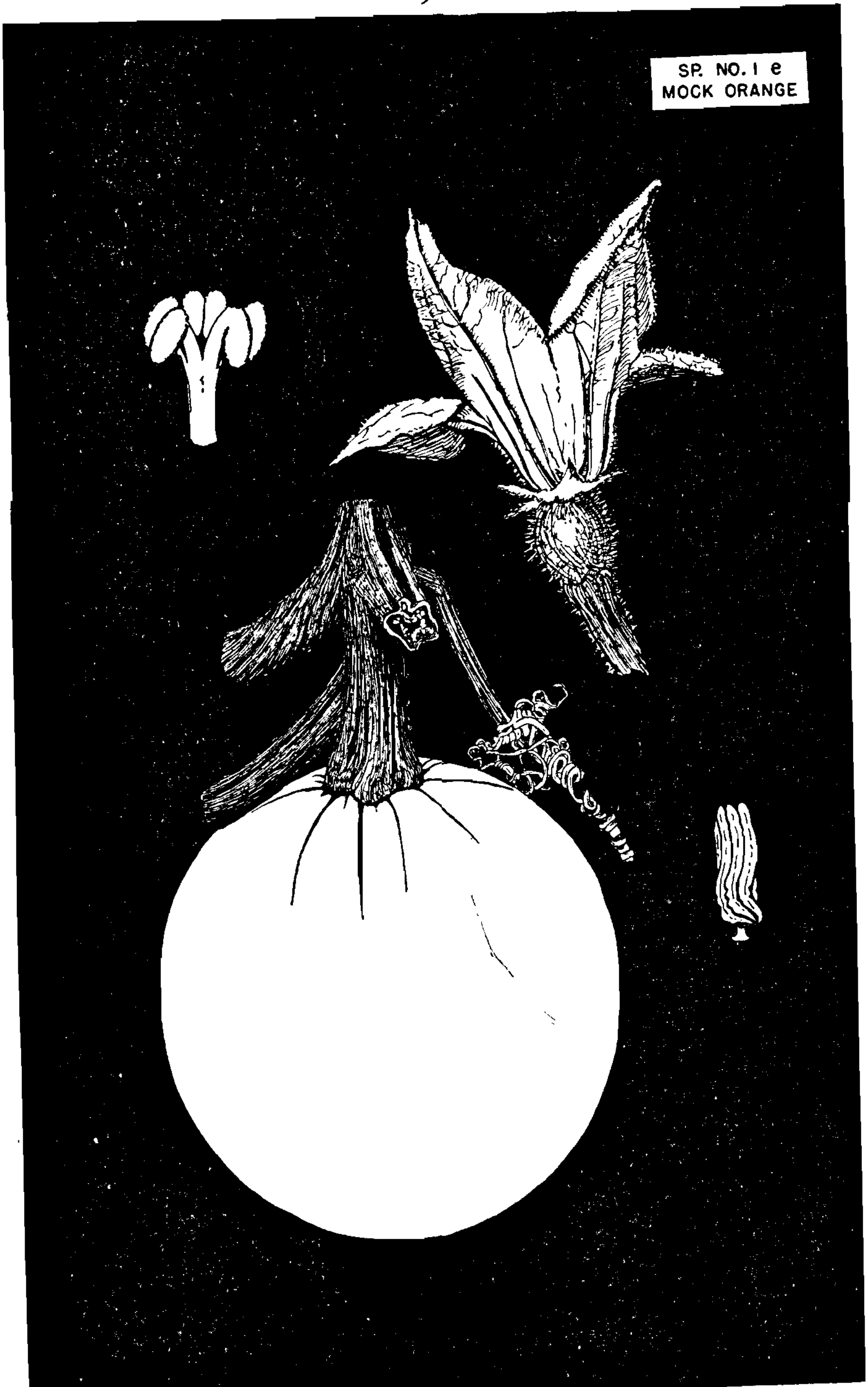
mass of seeds that are held by fibers; yet even in mature pumpkins and squashes one may follow the essential structure if one knows what to see.

The floral envelopes, calyx and corolla, are on the plan of five, so far as members are concerned,—five calyx-lobes and five corolla-lobes. Structurally, the envelope is adnate to the ovary and it forms part, at maturity, of the thick wall of the fruit. The fibrovascular bundles extend lengthwise the fruit, and their systems or places are marked by the stripes although the color or pigmentation may be only epidermal or sub-epidermal. The fibrovascular system resolves itself into double the floral members (representing median and marginal bundles), or ten alternating stripes, making twenty lengthwise markings when the fruit is normally mature; or in some cases, as in the White Egg gourd, the structure may not be apparent on the surface, although telltale ridges or grooves may appear about the stem. In the Crookneck summer squash the lines of warts can usually be traced easily on the "handle" or narrow part. In certain hard-shell gourds the ridges run forward into projections or fingers. Frequently the markings are smooth ridges and furrows without distinct color associations, as in the field pumpkin on which one may ordinarily find twenty units.

The Finger gourd, just mentioned, is a curiosity, although understandable to the morphologist. The reader may see it in the last picture in the book. Ten prongs extend from the ridges or angles, standing free from the front part of the fruit. Some or all the prongs or fingers may bear a furrow or valley down the back and two points at the apex. The fingers are hollow when inside pulp or fiber dries away. The shell is hard and durable, as in other yellow-flowered gourds. Base of the gourd, about the stem, shows the ten customary main grooves. It is white or ivory-white. This fruit has received several meaningless names, testifying to the wonder the thing arouses. It is known as Holy gourd, Crown of Thorns, Gourd of the Ten Commandments, Sugar-bowl. Seeds usually command a high price, when they can be found at all. Odd progeny may come from the seeds even if few of the Finger type appear. Page 131.



THE APPLE GOURD



THE STANDARD MOCK ORANGE GOURD

Even the warts on the small gourds follow the fibrovascular lines although they are not always so confined. Frequently the entire surface is involved in excrescences or warts, but even then one usually finds lengthwise furrows between them.

With these suggestions to guide the eyes one may look at gourds with new interest. One will note the twenty spokes at E in Species 1, *j*. One may see them in the picture of the little Table Queen or Acorn squash (not a hard-shelled gourd) at the bottom in Species 1, *m*, with a cross-section at right that indicates the hollow interior and the ten fibrovascular systems under the valleys.

The foregoing remarks apply with particular directness to the plants we are to learn to call Cucurbitas, yet they hold with appropriate variations in other members of the Gourd family. In Luffas the ridges may be very pronounced. In Lagenarias the markings may not appear on the surface. One may wish to extend these superficial observations beyond the fruits we call gourds to cucumbers, melons, squashes, and pumpkins; this will lead to a better understanding of the fruit known as a pepo.

It is not necessary to say what is meant by a gourd, yet in this booklet I shall include many kinds that people may not recognize as coming within the meaning of that name. The uses of the word vary among different peoples and perhaps at different epochs. A gourd is naturally a member of the Gourd family, and that family comprises all the melons and cucumbers and pumpkins and squashes; this establishes their relationships, which is the first point in accurate identification. The name has been employed elsewhere for pumpkins and squashes in general, but in common speech in North America it signifies a hard-shelled durable fruit grown for ornament, utensils and general interest. In this latter sense we shall use it here, although we may be interested to find other closely related ornamental fruits that may be externally soft and not

durable. Dictionary definitions allow such latitude. A gourd is a fruit, product of a flower, as is an apple or orange.

Some persons restrict the word to a particular kind of gourd, known otherwise as Lagenaria, but the public does not make such careful distinction. Nor do we need to pause with Jonah's gourd, which came up over him when he sat in his booth on the east side of the city, for that may have been a castor-bean plant although the citation is naturally not botanical; others suppose it was Lagenaria.

The kinds of gourds and gourd-like fruits entered in this book are so many and so diverse that they must be classified into groups, otherwise they may not be well comprehended. One must understand at the outset that all of them belong to the natural order Cucurbitaceæ; and this word is a general plural of Cucurbita (Cucúr-bita), which is the leading genus and which comprises all the pumpkins and squashes and cymlings and vegetable marrows. There is no way of understanding these relationships except to call the plants by their Latin names, which have definite application as well as being euphonious and pleasant to pronounce; they are sensible, which is more than can be said of many of the vernacular names of plants. Persons who do not care to speak clearly about any kinds of plants are of course under no obligation to grow them.

In a general way we may say that gourd fruits are of two groups—those with a hard durable shell that retains its shape indefinitely even though the interior dries up and the object becomes practically empty; and the soft or at least not durable kinds that decay, shell and all, after a time, and this group includes, among others, ornamental fruits of the melon tribe (which also is of the Cucurbitaceæ). A fair arrangement works itself out as follows:

I. The hard-shell durable gourds with large bright yellow or cream-yellow flowers and plain white flat seeds.

Species 1. *Cucurbita Pepo* var. *ovifera,* with rough herbage, prominently lobed leaves, fruit-stems hard and angled and usually enlarging next the fruit; comprises most of the common ornamental gourds.

Species 2. *Curcubita* as yet unnamed, wild in the Petén region, Guatemala.

Species 3. *Cucurbita okeechobeensis*, the wild gourd of the Lake Okeechobee region in southern Florida.

Species 4. *Cucurbita fœtidissima*, perennial gourd native from Missouri and Nebraska to Texas and southern California.

Species 5. *Cucurbita maxima*, with soft-hairy herbage, mostly orbiculate unlobed leaves, and soft fruit-stem cylindrical or not grooved nor enlarged at attachment with the fruit.

II. The soft-shell or not durable gourds or ornamental gourd-like fruits, the rind not lasting when the flesh perishes, with yellow or yellowish flowers and plain white or black seeds.

A. Seeds like those of pumpkin in size and shape, black or white.

Species 6. *Cucurbita ficifolia*, a vine of enormous growth producing green-striped heavy fruits five or six inches in diameter.

AA. Seeds like those of cucumber or muskmelon, small, white, plain.

Fruits smooth or only pubescent.

Species 7. *Cucumis Melo*, small-fruited races or varieties of the muskmelon group.

Fruits densely hispid or tuberculate.

Species 8. *Cucumis Anguria*, with tuberculate fruit; gherkin.

Species 9. *Cucumis dipsaceus*, with thickly hispid fruit; teasel gourd.

III. The remaining species, durable or perishable, flowers white or yellow, and seeds of angular or odd shape, with ridges or corrugations and perhaps raised edges or margins, or scalloped, white or colored.

A. Plant a long tendril-bearing vine.

B. Flowers of ordinary or large size, three-fourths inch or more across.

Gourds plain on surface, without spines or tubercles or hairs, shell very durable.

Blossoms borne singly (one on a flower-stem), white.

Species 10. *Lagenaria siceraria*, the common bottle, calabash, dipper, sugar-trough gourds, with musky foliage.

Blossoms (at least the big staminates or males) several together on the stem.

The blossoms yellow, not fringed; shell durable.

Species 11. *Luffa cylindrica.*

Species 12. *Luffa acutangula.* The dishcloth gourds or vegetable sponges.

The blossoms white, fringed into hair-like divisions; shell not durable.

Species 13. *Trichosanthes Anguina*, with slender fruits, often three feet or more long.

Gourds hairy and variously wax-covered when ripe.

Species 14. *Benincasa hispida*, the wax gourd.

Gourds covered with tubercles or blisters, splitting open at maturity.

Species 15. *Momordica Charantia*

Species 16. *Momordica Balsamina*. Often grown on porches and screens for the much-cut small leaves and singular fruits.

Gourds large and heavy, densely covered with spines or eruptions.

Species 17. *Momordica cochinchinensis*, vigorous perennial from Cochin China and other parts of eastern Asia, grown in the tropics.

BB. Flowers very small, inconspicuous, about one-eighth inch across: fruits spiny, of odd shape.

Species 18. *Cyclanthera explodens*.

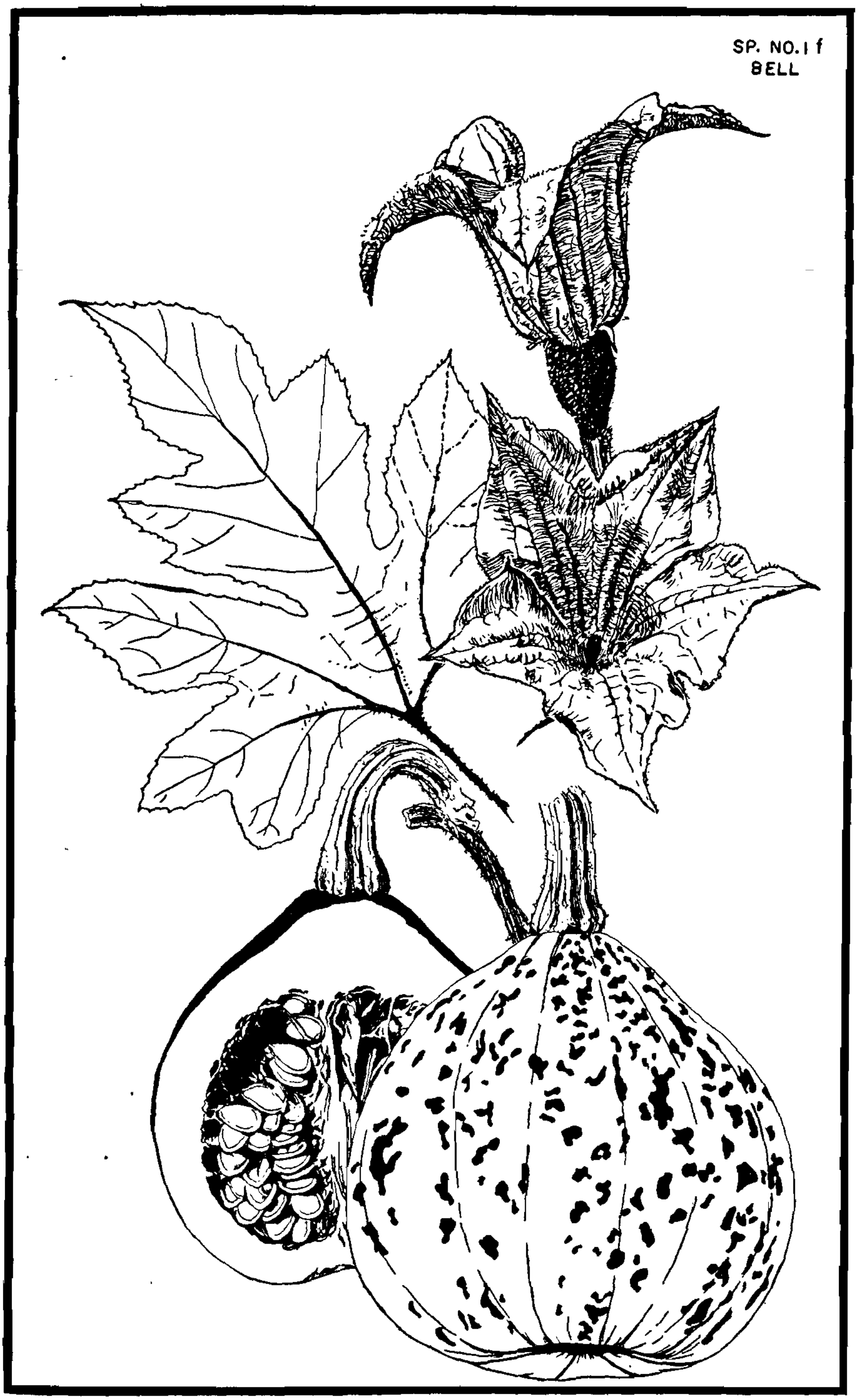
Species 19. *Cyclanthera pedata*. Ornamental fine-leaved vines with odd small fruit.

AA. Plant an erect or sprawling low stout herb, without tendrils.

Species 20. *Ecballium Elaterium*, with explosive squirting soft-prickly fruits.

The reader may be interested to know that the Cucurbit or Gourd family contains erect shrubs as well as herbs. Most of the species, however, which are assorted into about ninety genera, are soft partially succulent rapid-growing tender vines, climbing by means of simple or forked tendrils. Something like seven hundred species are now recognized in the world, in tropical regions and hot-summer parts of temperate zones.

The Cucurbits are of many categories in respect of leaves, and the foliage effect is striking, usually decorative or ornamental. We shall observe some of these peculiarities as we proceed, for the foliage should be admired even though we grow the plants only for their fruits. The bold strong leaves of pumpkins and squashes are highly decorative, particularly as they abound in exposure to full sun where the shadows are large and deep. The greens are heavy. It is astonishing how



THE BELL GOURD

rapidly these big vines cover the land when they begin to push forth in the heats of summer; and it is unceasing marvel how the massive fruits come out of them.

The common garden ornamental yellow-flowered gourds are only forms of the pumpkin and squash species, as we are about to learn; and the gourds by themselves would seem to have no evident relation to the vines we may know, from observation, to have borne them. A gay company of these gourds is in front of me as I write, and there is nothing in them to suggest a short-lived vine rather than a tree or a rollicking bush.

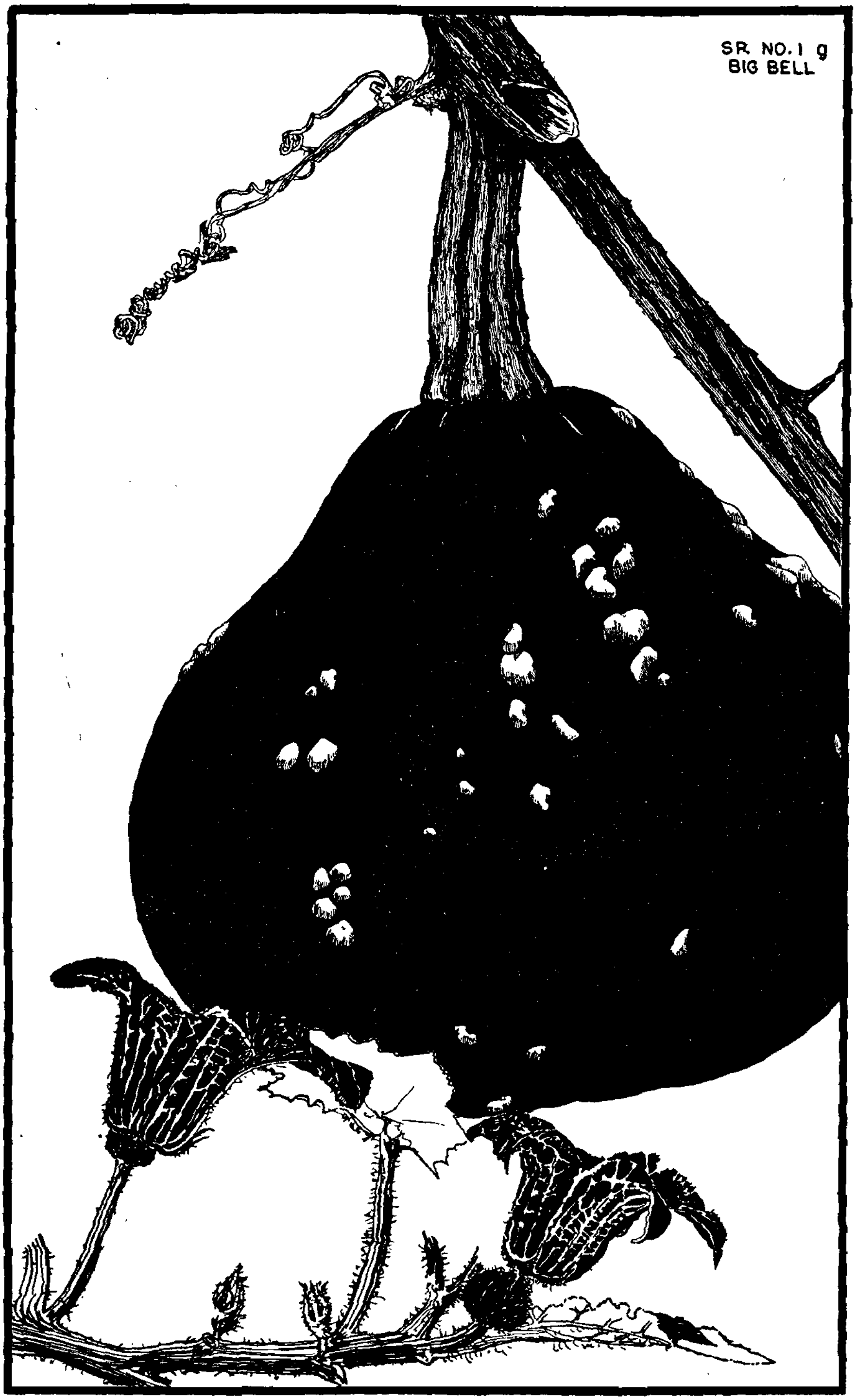
Cucurbits are monœcious or diœcious, which means that the stamens and pistils are in separate flowers rather than in the same flower as in apples and hollyhocks. Mostly, the two kinds of flowers are in separate blossoms on the same plant (monœcious), as in all the pumpkin tribes and the common gourds. In the few cases the flowers are on separate plants (diœcious: two houses).

In the garden gourds the staminate or male flowers begin to appear a few days or a week or two before the pistillates or females. They are borne on long stalks and are therefore showy by being elevated. They open at night or early morning and perish that day if the sun is on them. The pistillates may be equally showy but they are borne under the foliage on very short stalks; they are distinguished by the little beginning fruit or gourd underneath the corolla. The pistillate corolla perishes usually the same day, but of course the flower does not fall else the fruit would not be developed. One will be interested in finding these sexes in the pictures printed in this book.

We may examine the flowers in the pictures. *Cucurbita texana* plate, pistillate flower at top; Species 1, *d*, pistillate flower; Sp. 1, *e*, pistillate flower, at left the three two-lobed stigmas, at right the twisted cohesive anthers of which there are three, each with two cells or compartments; Sp. 1, *f*, pistillate flower and front view of a staminate flower; Sp. 1, *g*, a staminate and a pistillate flower; Sp. 1, *l*, staminate flower.

Fertilization of the pistillate flower takes place, of course, from a staminate flower, the agency being an insect. It is doubtful, however, whether there is impregnation between two flowers on the same plant; experimental efforts to produce such effect result in failure. Therefore, the seeds of gourds are probably always crosses between two different plants. If these parents are the same variety or like each other, the new plants arising from the seeds are likely to be true to name; but if the parents are of different varieties (not different species) the resulting seedlings will be a mixture, and the grower may not then raise the kind of gourd he desires. In fact, one must not count too confidently on finding all his plants true to name from any batch of seed inasmuch as there is natural variation (the variety may not be "fixed"); but if a person grows many kinds of gourds in his garden he must not expect to reproduce a uniform crop the following year from his seeds. Some persons prefer the miscellany of forms and colors; but better gourds are to be expected from a given variety that is grown in considerable numbers of plants by itself.

Tendrils of the common gourds consist of a main axis and then two or three or more long forks. These forks or branches move to find support. When the end touches something rigid it hooks about the object and clings, and then begins the coiling process by which the plant is brought closer to its support and is held securely in the elasticity of the spiral. The tendril does not twist continuously throughout its length, but the direction of the coil changes midway. This slack space is readily seen in any coiled tendril when the end of it is attached to an object, often as a straight or blank place: such a place is shown in the lower right-hand corner (above the flower) of the colored frontispiece, as well as elsewhere.



THE BIG BELL GOURD

CUCURBITA PEPO, AND THE YELLOW-FLOWERED GOURDS

The usual *field or stock-feed pumpkins and the common* summer squashes belong to the species *Cucurbita Pepo.* It is an astonishing variety of fruit forms to have arisen from a single species. The Acorn or Table Queen squash at the bottom of Species 1, *m* is *Cucurbita Pepo;* also the odd Finger gourd in Plate 131, at the end of the book. The vines may themselves differ greatly, those of some varieties being big and long-running, with abundant tendrils, others being of bush form with no tendency to run and perhaps with only obsolete or undeveloped tendrils.

The field pumpkin and the bush summer squashes are not known in a native state. At present we assume they have developed in the course of time from a small hard-shelled gourd. Such a gourd, belonging to this species, is now wild and apparently indigenous in river valleys in southern Texas; probably it occurs also in Mexico. It has been known in the literature of botany for eighty-six years as *Cucurbita texana,* but it is only in very recent time that it has been accorded careful study in the wild and has been tried as a regular garden plant. It is shown in the plate *Cucurbita texana.* American Indians grew pumpkins for food at the time of the discovery of the country; it is supposed their fruits had been developed from something like the Texan gourd.

If the pumpkin, *Cucurbita Pepo,* has developed within human time from the Texan gourd or its equivalent, then it might be supposed the name *Cucurbita texana* would be adopted as the name for all the field pumpkins and summer squashes with the name *Cucurbita Pepo* becoming a synonym or duplicate of it; or if the developed *Pepo* is thought to be distinct enough to merit a Latin name, it might be referred to *texana* as a botanical variety. Such, however, is not the method of botanical nomenclature (pronounced nȯ-menclature, accent on first syllable). The oldest Latin or botanical

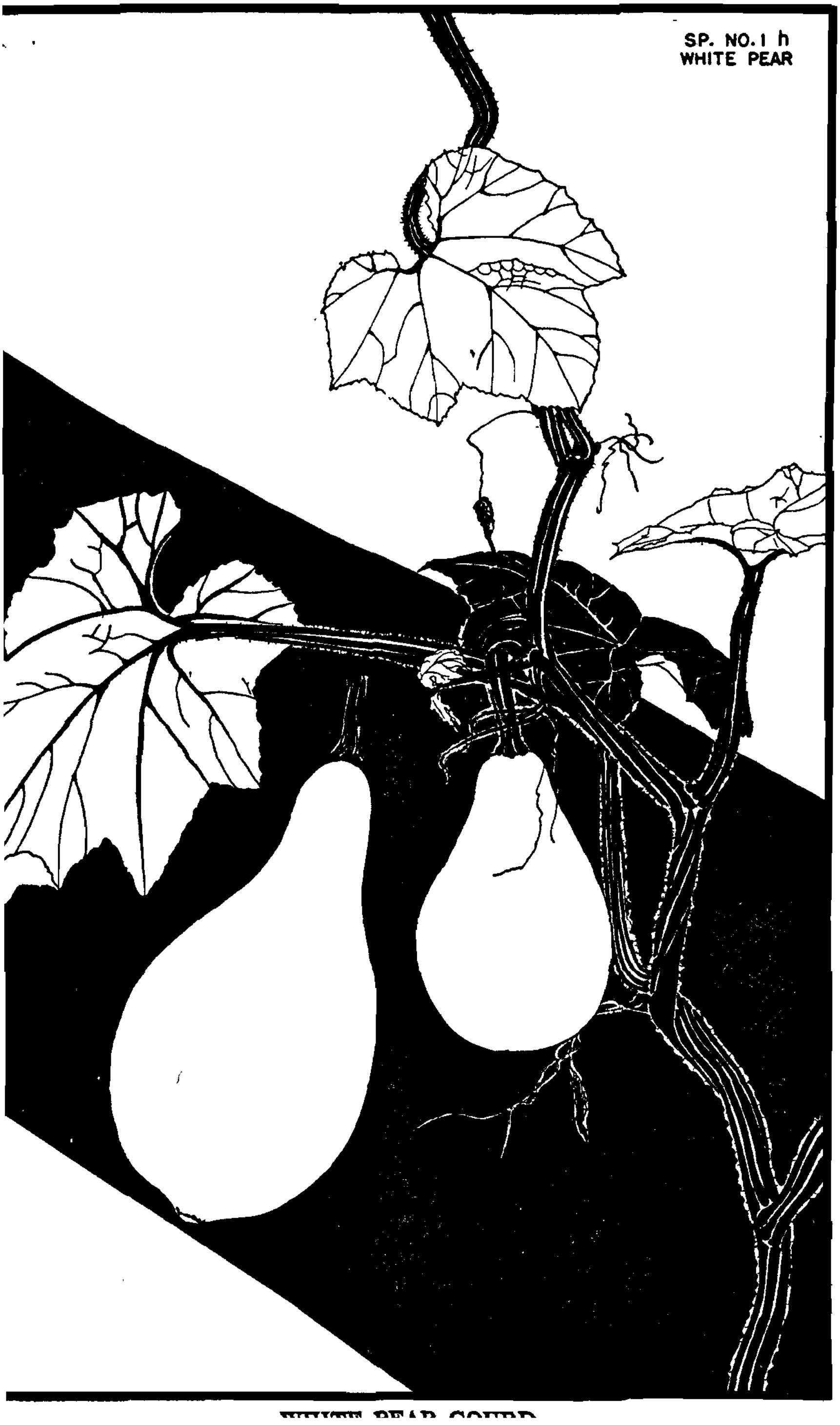
name must hold if published by Linnæus in 1753 or subsequently; and *Cucurbita Pepo* was published by Linnæus, the plant having been known to him only as a cultivated subject. The odd word *pepo* was employed in Latin for a large edible fruit of a gourd or melon kind; to botanists the word when employed separately now designates the pumpkin kind of fruit, whether it be squash or cucumber or watermelon. From the word *pepo* or *pepon* is undoubtedly derived the English noun *pumpkin.*

In 1767 Linnæus described another Cucurbita that he named *C. ovifera* (ovíf-era), which means egg-bearing, from the shape and size of the fruits. This, also, was a cultivated plant, although Linnæus supposed it to have come from Astrachan, which is in the Caspian Sea region. This plant was subsequently referred to *C. Pepo* as var. (variety) *ovifera,* on the conviction it is not a species distinct from *Pepo* but only a form or race of it. It is now concluded that *Cucurbita texana* is likewise a form of the *ovifera* group, and that the Oviferas in cultivation in Linnæus' time had arisen from seeds introduced originally from America inasmuch as these Pepo plants had not been known in Europe before the discovery of the New World. Therefore we may have this display:

Cucurbita Pepo, field pumpkins and bush summer squashes.
C. Pepo var. *ovifera* (*C. texana*), the hard-shell yellow-flowered gourds.

Of course the whole subject is not as simple as this statement seems to indicate, but the complications do not affect the present discussion and we may leave the remainder of the problem to those who study these subjects. This brief account explains why we speak of the Ovifera gourds.

To the general gardener it may seem strange enough that products so unlike as the little hard egg gourd and the great stock-feed pumpkin could have come from the same original species of plant, yet the essential features of foliage and flowers remain the same throughout. Moreover, if one were to grow



WHITE PEAR GOURD

all the kinds of Pepo pumpkins and squashes one would find practically every gradation from one extreme to the other, not alone in size of fruit but in shape, color, and markings.

These ranges of forms have been known to some extent for centuries. Undoubtedly they had begun to develop among the American aborigines in prehistoric times. The herbalists, writing in the Renaissance but after the Discovery, knew them. Thus Lobel or L'Obel, to whom Linnæus dedicated the genus Lobelia, has a picture of the pear gourd plant in his big volume, Plantarum seu Stirpium Historia, published in Antwerp in 1576; this picture is reproduced on the page of Pre-Linnæan Gourds. The upper picture shows *Colocynthis pyriformis,* now known as pear-shaped Ovifera gourd, belonging to the species *Cucurbita Pepo.* The lower picture is, in his legend, Cucurbita or Zuccha, which we know now as Lagenaria; the fruits are all of one kind, which in this day we know as a short Hercules Club.

John Parkinson in 1640 has a picture of three forms of gourds in Theatricum Botanicum, shown at the center on the picture page. He legends them "Indian Gourds, Ovall, Peare-fashion, and almost round." Parkinson has a paragraph on "Cucurbitæ Indicæ rotundæ & diversi formes," at a period when geographical terms in such cases might be little more than suppositions of a far-away origin. The text is in English, quaint enough in these later days, and it is here reproduced verbatim even with the f-like long *s* type of former time:

"Round *Indian* Gourds, or Millions, or Pompions, and of other formes.

"There is very great varietie of theſe Gourds (or Millions as ſome call them, or Pompions, as I may call ſome of them) that come out of *America* or the Weſt *Indies,* from ſundry places, both farther South among the *Spaniſh* Colonies, and nearer hand in our owne of *Virginia, New-England, &c.* Some whereof in their forme are as round as long, ſome longer like a Peare, ſome more long then round, and ſome flat at the bottome: ſome alſo as great as our Pompions, ſome as ſmall as an Apple, and ſome of divers other ſiſes, meaner or greater or leſſer, ſome with much moyſture or water that is very ſweete and pleaſant in them, and ſome having little or no meate, or moyſture: ſome againe diſcoloured on the outside, greene, with whitiſh or yellowiſh ſtripes in them, or ſpotted ſo finely that they give

great delight to behold them, ſome alſo reddiſh ſpotted or ſtriped, and ſome of a deepe yellow colour, the ſeedes in theſe likewiſe are variable in divers, ſome more like unto the ordinary Gourd ſeed, but blacker or browner, or red, in others white, either like the long Gourd, or like to our Pompions, yet few ſo large as our Pompion, and others as ſmall almoſt as the Cowcumber ſeede, ſo that to give you an ample declaration of every one of them were a worke of curioſitie, and of more travell then profit, and therefore I muſt leave it for them that can intend it, and will gather them all together and publiſh ſuch a peece, I muſt convert my pen to other parts which I hope ſhall proove more beneficiall to the Commonwealth.

"Divers other ſorts of Gourds or Millions, or Pompions, or whatſoever elſe you pleaſe to call them, are growing and have beene brought us from ſundry places, both *Syria* and the Eaſt *Indies* differing from many here expreſſed, ſome being as red as blood both within and without, and much pleaſanter in eating then in any of theſe Countries, whereof to write more largely were almoſt ſuperfluous, the diverſitie being ſo great that we yearely almoſt ſee ſome ſort not before ſeene of us, and therefore who ſo will may quote thoſe they like in the margent or end hereof.

The Place

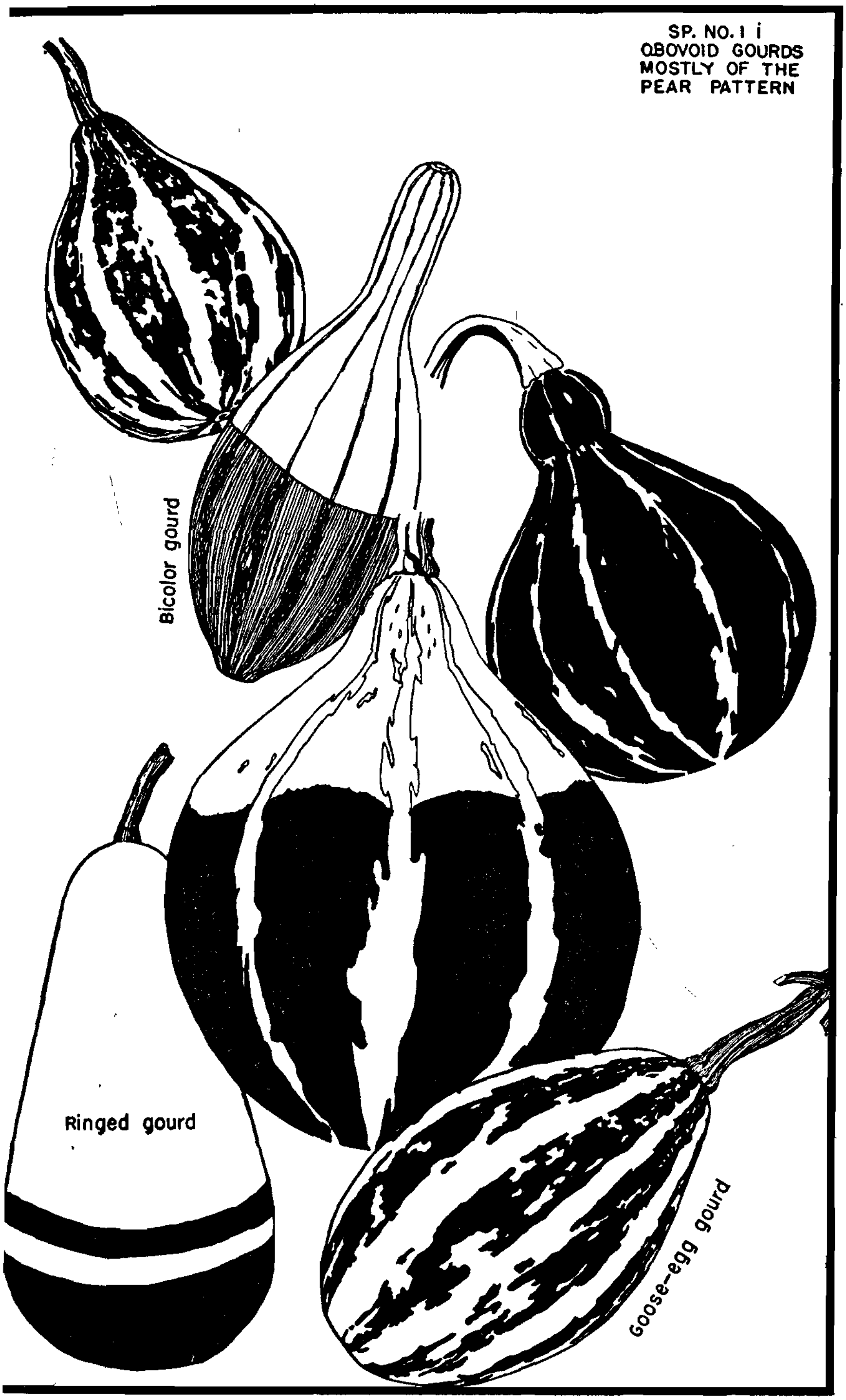
"All theſe Gourds are ſtrangers and brought from ſeverall places, ſome out of the *Levant*, as *Ægypt*, *Syria*, *&c.* others as I ſaid before out of *America*, both further off and nearer to us, as in *Virginia*, *&c.*

The Time

"They are all to be planted of the ſeede in the Spring, and in very good ground that muſt not want plenty of moyſture, or elſe the heate of our owne Country will not ſerve to ripen them."

Picture in upper corner at right of Pre-Linnæan Gourds is Pepo "Indicus minor rotundus," that is, small round pepo of India, which is a fruit of the gourd class. It is from Jacob Theodore Tabernaemontanus in his ponderous New Vollkommentlich Kräuter Buch published at Frankfurt-am-Main in 1664. This tome is luxuriously bound in hand-tooled vellum through which appreciative bookworms have drilled their holes; the covers are yet held together in front by remains of leathern thongs that clasp over brass pegs. Tabernaemontanus pictures many kinds of Cucurbits, including forms of Lagenaria.

Lowest picture on the right in the page is from Pier Andrea Mattioli (latinized Matthiolus) in De Plantis Epitome Utilissima, Frankfurt-am-Main, 1586. It is what we now know



PEAR-LIKE GOURDS

THE SPOON GOURD

as Lagenaria but by him was called Cucurbita. It may be noted that three or four distinct forms of fruit are shown at this early date, as well as a seed, also staminate and pistillate flowers.

When we come to definitions of the particular kinds of Ovifera gourds now in cultivation, we find little exact authority. Botanical accounts of *Cucurbita Pepo* may designate varieties under name to some extent, but not sufficient to define the garden kinds now current. Thus Seringe in DeCandolle's great Prodromus, 1828, includes only two Pepo varieties, var. *subrotunda* and var. *oblonga,* and these are designations of pumpkins rather than of hard-shell gourds; but he still keeps *C. ovifera* of Linnæus as a distinct species, and describes the fruit as obovoid smooth green or yellow and form of a hen's egg. Apparently he did not know much about the garden gourds.

Roemer published in Weimar in 1846 a volume devoted to the Cucurbitaceæ, and he made careful disposition of the plants we now are calling gourds. Many Latin names are employed for the particular kinds. These names and classifications do not meet the practice of the present epoch, however, so we do not need to pause with them in this popular writing; but the Roemer treatment is useful to students of these plants.

In 1856 the Frenchman, Charles Naudin, who was a special student of plants of the Cucurbit family, mentions the great numbers of forms of garden gourds but without definition. It remained for the German, Friedrich Alefeld, in 1866, to give Latin varietal names to any number of the fruit forms of garden gourds, but these names are of little value in a horticultural discussion, nor can many of them be applied with precision to kinds of the present day; if such nomenclature is ever stabilized it must be presented in connection with accurate portraits of the fruits or gourds, as a matter of record.

It is not to be inferred that the differences between the Ovifera gourds lie in the fruits alone; the foliage is likely to be significant, also, as in size of leaves and the way in which

they are cut or lobed; there may be dissimilarities in vigor or stoutness of vine, as well as in season of maturity. All these characteristics add to the interest of growing the gourds, if one has eyes for them.

All the Ovifera gourds differ in vine from the field pumpkins and squashes of the same species, *Cucurbita Pepo*. The plants are more slender, with smaller leaves and flowers, in keeping with the little fruits; yet I have grown hard-shell gourds as large as garden squashes. Seeds of the Oviferas are like those of the field pumpkin except much smaller, mostly about one-half inch long and half as broad, white, thin-edged.

Having had all these many introductions we are now ready to consider the particular kinds of Ovifera gourds one may expect to grow from seeds in the market. These kinds can hardly be distinguished by means of the printed descriptions, and we must rely largely on pictures for identification. In a book like this we shall not attempt to describe the differences between the kinds in vine and foliage. Let it be said, also, that the intending grower will not find all the names of this brief list in the seed catalogues or even in other literature, from the fact that some of the names are first made right here. The reason for inventing names is a desire to bring something like uniformity into the subject, inasmuch as confusion is at present perplexing. The names, moreover, are intended to represent classes rather than exact varieties to be always obtainable in the trade. Essentially all the kinds (and many more) shown in the pictures I have myself grown, except page 131 which are fruits grown by others.

The classes of gourds here defined are distinguished from each other by the three features of shape, size, color. We shall begin with the simplest or least distinguished class, after having paid our compliments first to the native Texan gourd.

CUCURBITA TEXANA

The Texan gourd as I have collected it in nature on the wooded bottom lands or flood plains of the Guadalupe River in

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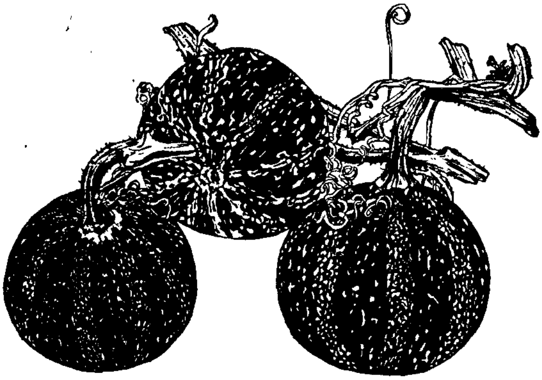


MINIATURE GOURD

THE BROAD STRIPED GOURD; SEEDLING

southern part of that state climbs over bushes and on small trees, with every look of the slender-vined Ovifera gourds of the gardens. The herbage is harsh with prickly growths, leaves more or less deeply five-lobed, flowers deep yellow or orange-yellow and like those in gardens: fruits (gourds) somewhat oblate or flattened endwise, two and one-half inches across and a little less in height, green at maturity when fresh and prominently marked lengthwise with broad bands of yellow-green or light green with spots of the same color in the intervening green background. In the picture the light colored stripes are shown in white. These gourds are hard-shelled, like a garden gourd; it was seven years ago that I gathered them and they are still in perfect form in my collection although the colors have vanished. The flesh was scant and bitter. All the fruits I saw were the shape and color here described, although some of them were only two inches across at full maturity.

In another colony of them a few hundred yards upstream visited by another collector the gourds were of different shapes; an ovoid one is shown at the top in the picture. In my collection of Texan gourds from the wild is a nearly globular specimen three inches across, and, strangely enough, bearing a few warts such as one sometimes finds on cultivated kinds; one ovoid, two and one-quarter inches crosswise; one with a tapering stem-end and almost pear-shaped, three and one-half inches long and nearly three inches broad; two oblong fruits narrower at stem-end, three and one-half inches long and one and three-quarters inches thick. From another Texan locality I have a smaller fruit, two inches broad and one and three-quarters inches high. Seeds are like those of the Oviferas, about three-eighths inch long. All these gourds carried the stripe pattern shown in the picture, which in detail is unlike that in most garden kinds. Long ago, Asa Gray grew this gourd at Cambridge, Massachusetts, from wild Texan seeds, and he described the fruits as pear-shaped.

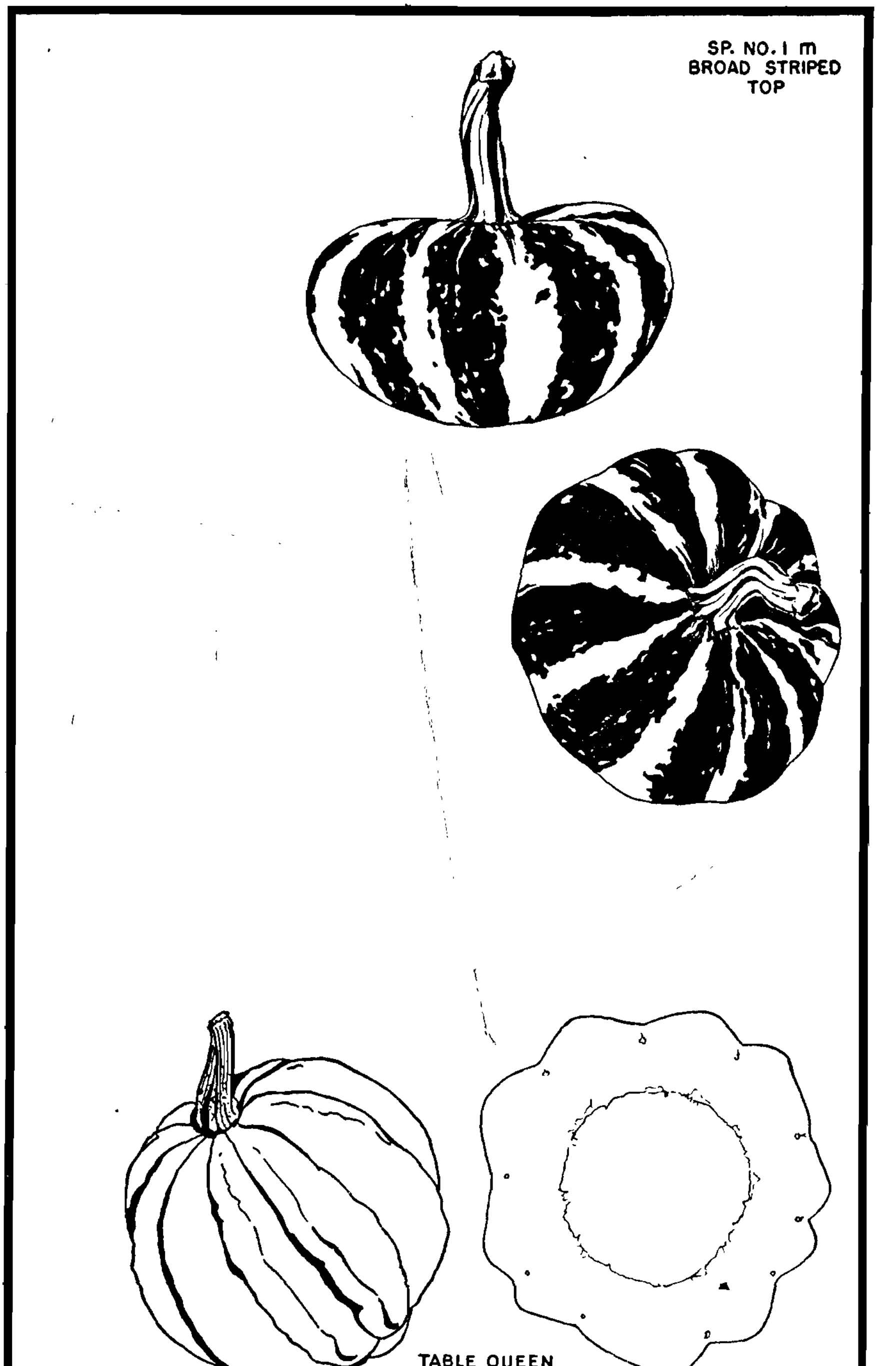
At Ithaca, New York, I have grown plants from my Guadalupe seeds and the fruits were like their parents, as

shown in the picture. The flower and the habit sketch in the picture are drawn from the Ithaca progeny although I photographed flowers in the wild. In cultivation in good garden land and without competition the first-generation plants produced larger leaves than in the wild and the flowers were nearly twice the size, or four inches across.

These variations in the fruits I have mentioned particularly inasmuch as they suggest possibilities for improvement under diverse conditions. Perhaps, as we have noted, the field pumpkins and summer squashes have developed from the Texan gourd or its equivalent elsewhere.

We have learned that Linnæus did not know the wild plant when he founded the species *Cucurbita Pepo* in 1753. He gives no habitat. There has been much speculation as to the nativity of the species, which, in current definitions, is held to comprise many kinds of big and various pumpkins and squashes. It is not to be expected that we shall ever find any of these big things in a native or indigenous state. We have every reason to suppose they have developed through centuries from an indigenous plant that bears very small fruits. The big pumpkin things are amongst the marvels of the vegetable world; and they refuse to tell their own story.

There is historic and archeological evidence that *Cucurbita Pepo* is indigenous in the western hemisphere. Indians in pre-Spanish times grew it and fashioned earthenware objects from its forms. The name squash, as applied to these plants, is derived from an American Indian word; so we have the interesting case of a name for them, pumpkin, derived from a word transferred from classical sources along with another of aboriginal origin. The only very probable source we yet know is the Texas gourd. Perhaps this gourd, or some form of it, still grows natively somewhere in other parts of America. It is clear enough that the wild gourd in Texas, whether indigenous or run wild from introductions by Indians or others, is botanically the *Cucurbita ovifera* of Linnæus; and this *ovifera* is only one manifestation of *C. Pepo*,—what botanists, for purposes of



BROAD STRIPED GOURD; AND A SQUASH

nomenclature, as we have learned, know as *Cucurbita Pepo* var. *ovifera.*

Other species of Cucurbita are indigenous in the New World, producing little gourd-like fruits, as we shall find when we come to numbers 2, 3 and 4. Others, not yet known in cultivation, are *C. palmata* in southern and central California, *C. digitata* in New Mexico, Arizona and southeastern California, *C. radicans* and *C. Galeottii* in Mexico. *Cucurbita mixta* is a recent name for odd forms of pumpkins cultivated in Mexico and Central America. We shall consider the case of *C. maxima* when we discuss Species number 5. There remains *Cucurbita moschata,* which is known only as a cultivated plant, to which belong the Winter Crooknecks, Sweet Potato pumpkin and Cheese pumpkin; it was grown by North American aborigines; it is probably indigenous in the western hemisphere and there are native remains of the species.

SPECIES 1. CUCURBITA PEPO var. OVIFERA

The Ovifera gourds are the usual yellow-flowered kinds in cultivation. Every year I find new sizes, forms and markings in the kinds I grow; this means either that the varieties are not yet "fixed" or that the seeds were not raised in carefully isolated colonies; or, more likely, it indicates that both reasons are in the background. One will not be disappointed, therefore, if one's garden gourds do not match the pictures, although I have taken pains to illustrate the shapes and markings that appear to be most constant. I have chosen only a baker's dozen kinds of Ovifera gourds for illustration.

Aside from the frontispiece the colors cannot be accurately indicated, but the shape and placement of markings are suggested,—black for the heavier greens, white for light greens, yellows and whites; if otherwise, the text explains. The drawings require certain lengthwise marks and shapes to carry the impression of sphericity. These drawings are designed, as well, to suggest the decorative possibilities in these interesting plants.

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Egg. Species 1, *a,b,i.*

Gourd more or less shape of a hen's egg, or turkey's or goose's egg, often broader toward base, two and one-half to three inches long, breadth somewhat less than length and from one and three-quarters to two and one-half inches, clear white, or with color markings or small warts or evident ridges. The pictures *a* and *b* show representative forms. In many cases the fruits run into obscure pear-shaped or obovoid forms; I have grown so-called Pear gourds that are properly Egg-form.

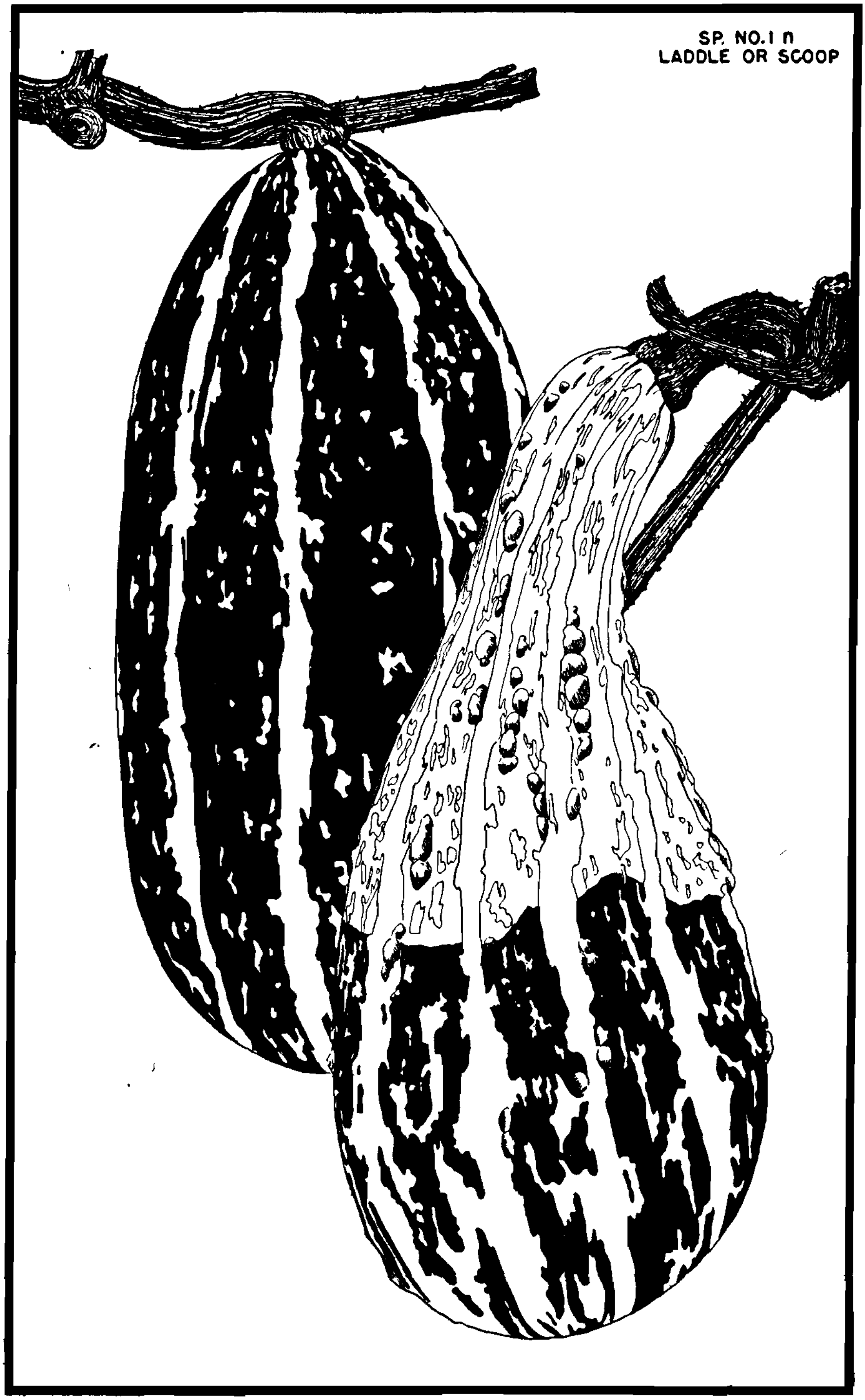
One is not to suppose the Egg gourd of gardens is precisely the *Cucurbita ovifera* of Linnæus, but that it comes within the general botanical class of *C. Pepo* var. *ovifera* which is based on the Linnæan description and on the dried specimen still preserved in his herbarium. Linnæus had grown the plant in his garden at Upsala, Sweden; he got a fruit with ten milk-white stripes, from which one would infer the body color was green, and he adds "as if a hybrid of the bryony" (which is another Cucurbit). We would now dismiss the bryony relationship. He says the fruit was obovate, smooth, of the size and shape of a hen's egg. I seldom see a gourd of this particular description.

Striped forms of a true Egg-form gourd are not frequent, but one approaching this shape may be found on Species number 1, *i.*

Apple. Species 1, *c,d.*

Oblate (flattened endwise as in Species number 1, *c*) or nearly globular to somewhat longer than broad and therefore short-oblong, either distinctly ribbed or surface plain, light yellow to white and usually without markings; if oblate, one and three-quarters inches high by two and one-half broad; if practically globular, two and one-half to three inches diameter; if short-oblong, about two and one-half inches high by two and one-quarter broad.

I have had this variety come somewhat smaller than these dimensions, and yet of stated form. Sometimes I get warty fruits, and this year I had a beautifully striped gourd, the



THE LADLE GOURD

lighter bands being very pale yellow, the fruit measuring 2 inches high and two and one-quarter across. My experience seems to show that the Apple gourd is not well stabilized in shape and size. The herbage is usually coarse.

Mock Orange, Orange. Species 1, *e.*

Heavier gourd than Apple, short-oblong or sometimes oblate, indefinitely or not at all ribbed, plain in color, dull or light yellow; size of fruit in number 1, *e* is three inches high, and a little narrower. This is a standard dependable productive variety of pleasing form, although not showy.

Bell. Species 1, *f.*

Intermediate in shape between Orange and Pear gourds, more or less perfectly bell-shaped, furnished with obscure longitudinal ridges, body color light yellow and conspicuously marked with irregular patches of green, giving it a freckled effect; gourd in Species number 1, *f* somewhat above three and one-half inches long and practically as broad. Some of my Bell gourds have been narrower and plain light yellow without furrows, ridges or decorations, therefore much less interesting.

Big Bell. Species 1, *g.*

Large heavy big-leaved gourd, sometimes sparsely warty and in other cases smooth, bell-shaped or upwardly tapering to a strong stem, four to six inches across and of nearly equal height, dark dull green in Species 1, *g* but sometimes cream-white.

Apparently a variable or unstable class of rather coarse plants. This is the gourd probably oftenest intended under the name Bishop's Mitre. I have not obtained fruits of Bishop's Mitre of sufficient uniformity to make description possible. If we go back to the Bischoffsmützen of Alefeld in 1866, his *Cucurbita Pepo* var. *mitriformis,* we find description of a gourd of the form of a bishop's mitre (which is pointed at top), like a bell in form, three inches high and two and one-half inches broad, with ten ribs which are strong near the stem and

flatten out on the main part, yellow hard shell and white edible flesh. I have not grown a gourd of this pattern.

White Pear. Species 1, *h.*

Pear-shaped, with the well-marked narrow part or handle at least one-third as long as the body (as in left-hand fruit in number 1, *h*), three to five inches long and two to two and three-quarters inches thick, surface not ridged, clear uniform white. A well-known "old-fashioned" gourd, formerly much used as a darning-ball.

The Pear gourds as a group run into short forms so that they intergrade into the Bell type, but by themselves they constitute a distinct and useful class of fair uniformity.

Striped Pear.

Like White Pear in size and shape but lengthwise striped and splashed with irregular bands of green and yellow in attractive patterns.

The striped and particolored forms of Pear gourds are common and handsome. Many of them, as in Species 1, *i* approach the Bell gourds in shape, the narrow end being short and thick but yet sufficiently distinct to make a handle.

Bicolor Pear. Frontispiece, left. Species 1, *i*, upper center.

This two-colored gourd is similar to White Pear in size and shape, but the lower half is green with dark stripes, the upper part or handle striped in shades of yellow. A familiar pattern of long standing, neat and pleasant.

Spoon. Frontispiece. Species 1, *j.*

Brilliant green-and-yellow gourds, with extended narrow handle and small ovoid or oblong body one and one-half inches or less thick, the entire fruit five to six inches long, with narrow nearly straight or curved part about one-half inch thick; green color sometimes extending throughout but oftener confined to the ball and sometimes showing only on the very tip; the bright yellow alternated with lines or stripes of very light yellow or almost milk-white, these colors frequently appearing

WARTY HARDHEAD GOURD

as well-defined patches in the green. One of the showiest of the Ovifera gourds, and the vine also attractive.

Miniature. Species 1, *k*.

Smallest of the Oviferas I have grown, nearly globular to somewhat oblate, one and one-half to two inches across and perhaps one and one-half inches high, of uniform shape, deep green marked with many thin interrupted lengthwise bands and flecks of lighter green. Vine slender.

Broad Striped. Species 1, *l*, *m*.

Distinctly flattened endwise, often much so, three to four inches across and sometimes only one-half as high, more or less angular, dark green marked with rather definite whitish stripes (*m*) or flecked and brokenly striped with greenish-white (*l*), base about the stem likely to be somewhat sunken or concave. An attractive gourd.

The fruits in *l* were grown from French seed, and those in *m* from German seed. Sometimes a few warts may appear on these gourds.

Ladle or Scoop. Species 1, *n*.

Big gourds, six to eight inches long typically with a handle (*n*, right) and fit for use as a scoop or ladle when hollowed out near the larger end, breadth one-third or less than one-half the length, often warty, in the ladle-like form usually pumpkin-yellow or lighter on the upper half, dark green with broad lighter stripes on the lower half, and a striking gourd. This is one of the kinds grown as Spoon gourd.

Warty Hardhead. Species 1, *o*.

A mixed or inconstant class of warty or verrucose very hard-shelled heavy gourds of a general globular or short-oblong shape, with perhaps variations into oblate forms as shown at the bottom right of the picture; fruits three to four inches across and in some cases a little longer, prevailingly green with lighter strong eruptions either in lines or confined to certain areas. Fruit at lower right is cream-white and may not belong strictly to this group. An attractive and decorative class of gourds.

SPECIES 2. CUCURBITA.—PETEN GOURD

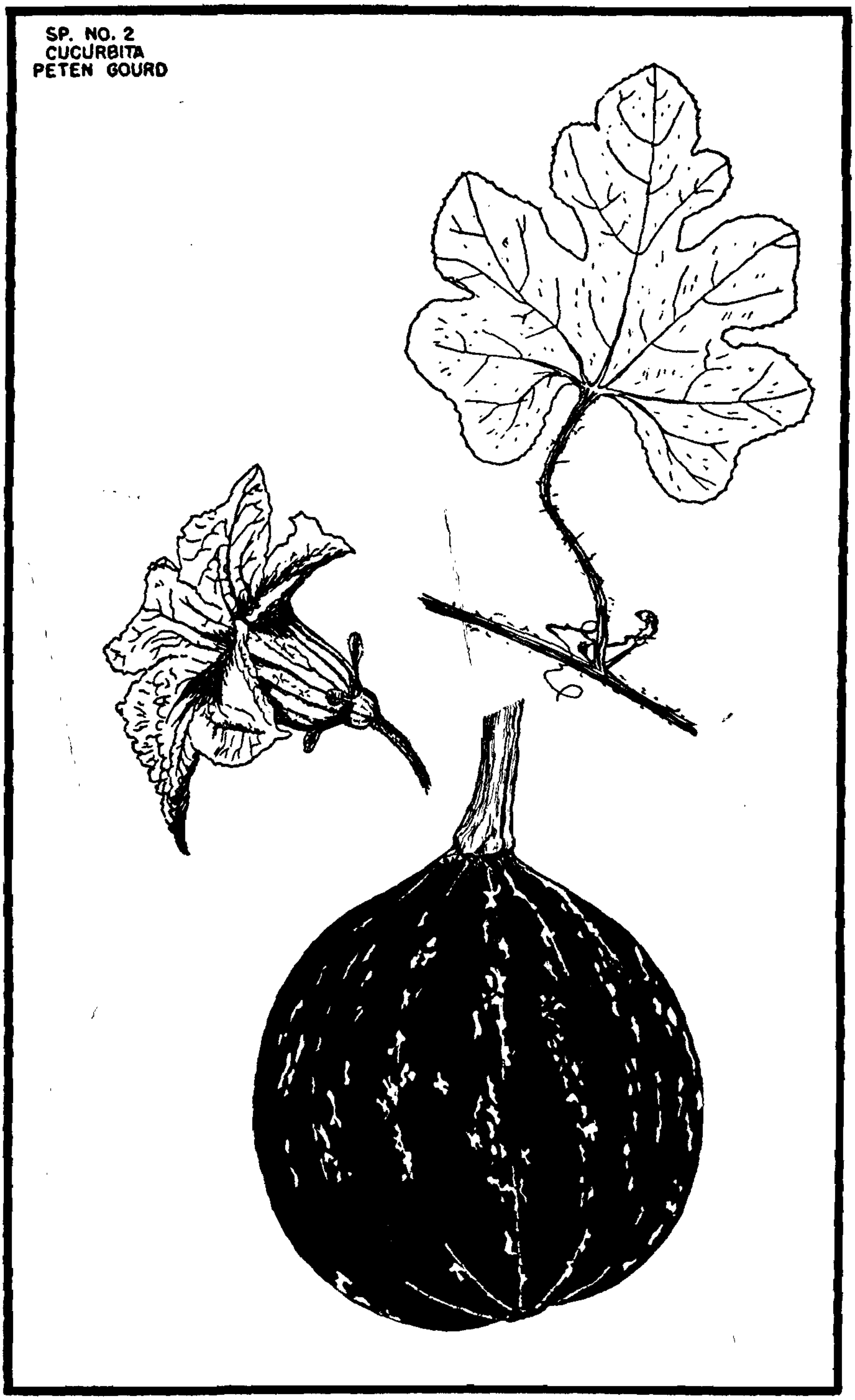
Handsome hard-shelled gourd from the Petén region in Guatemala, the botanical identity of which is not yet definitely established. I grew this gourd two years ago from seeds sent me by C. L. Lundell of the University of Michigan who is a student of the flora of the Maya region. The plant made a long straight hard deep root as if perennial, and it covered the ground with a dense mat of vines, bearing attractive five-lobed leaves that are more or less marked with ashy gray, pubescent underneath. The staminate flowers were about three inches long, orange-yellow with very prominent green ribs on the outside, making a pleasing effect; calyx-lobes spreading and expanded at the end, as shown in the picture. Pistillate or female flower of similar size and equally showy, the calyx-lobes narrower.

Fruit did not mature at Ithaca, but a handsome specimen from Petén is shown in the picture. It is short-bell-shaped (gradually narrowing to the stem), but the main part nearly globular, two and three-quarters inches long and nearly as broad, faintly ribbed lengthwise, green with lengthwise blotches of lighter color. It has been supposed this plant is *Cucurbita radicans* (radì-cans) described seventy years ago by Naudin who grew it in France from seeds collected in Mexico, but this point is to be clarified.

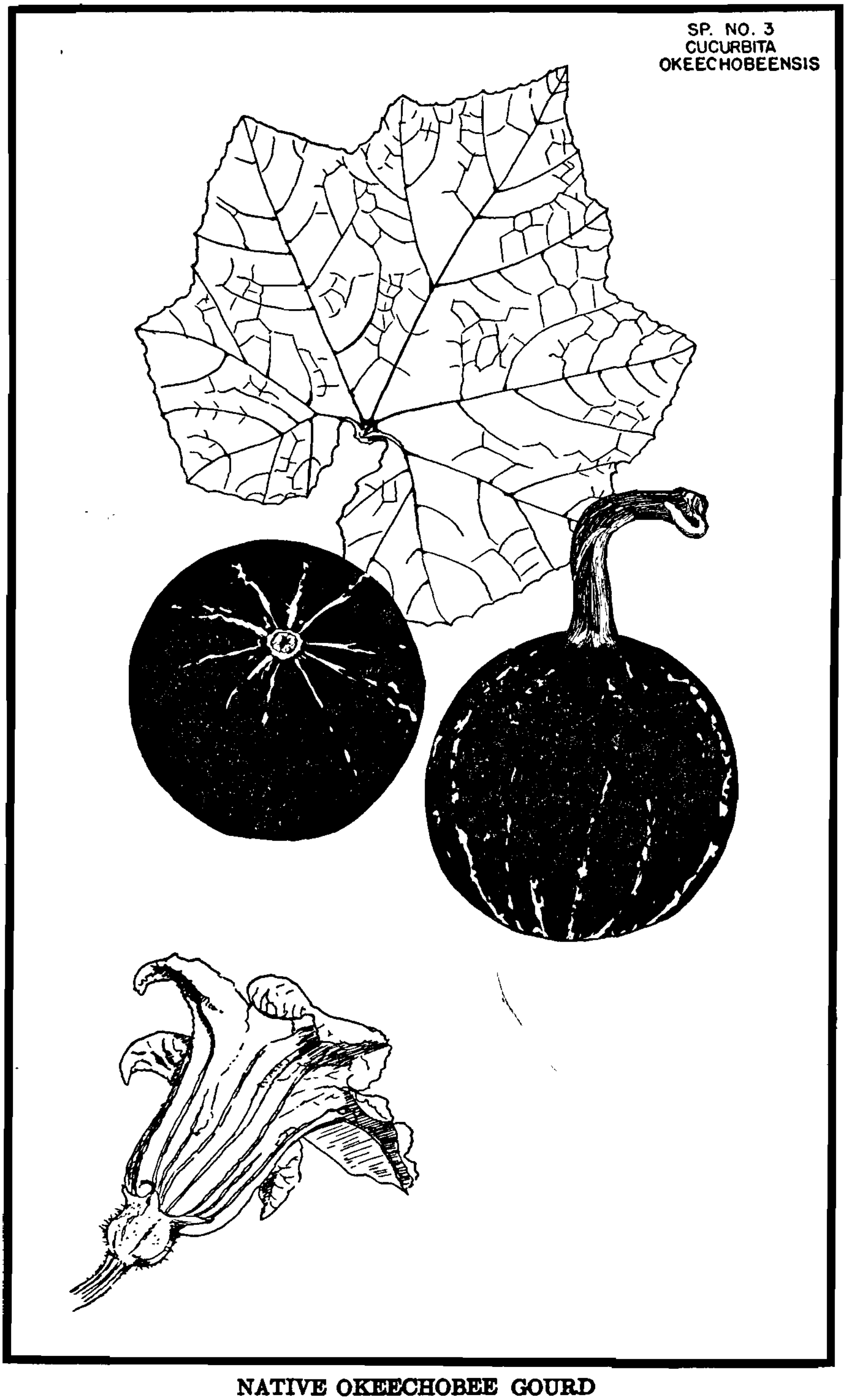
Account of this Peten gourd is inserted here to call attention to what may be a valuable addition to the garden treasury; it should do well farther south, and very likely short-season races would develop under cultivation.

SPECIES 3. CUCURBITA OKEECHOBEENSIS

The Okeechobee gourd grows abundantly in heavy tangled woods and tendril-climbs into tall trees along the south-eastern shore of the Lake Okeechobee in southern Florida. It has received careful study and a technical name only so late as 1930 (Okeechobeén-sis: citizen of Okeechobee). At one



THE PETEN GOURD



NATIVE OKEECHOBEE GOURD

time it was thought to have some relation with the Seminole pumpkins the Indians grow on their islands in the Everglades, but this is erroneous. The Indian pumpkin is another species, *Cucurbita moschata* (moschà-ta), which has already been mentioned but which is not treated in this book because it appears not to have yielded hard-shell or ornamental gourds. There appears to be nothing in the Seminole cultivation of this pumpkin to suggest the nativity of *C. moschata;* these people grow only well-developed rather than primitive forms of the species.

Okeechobee gourd is annual, of long vigorous growth and grape-like foliage of only shallowly lobed leaves. The gourds hang conspicuously from trees long after the herbage is dead. The flowers are cream-color or nearly white rather than bright yellow, with very small sharp calyx-lobes. The gourds are nearly globular, long-stemmed, with somewhat flattened apex, three or three and one-half inches in either direction, hard-shelled and durable, light green with faint longitudinal lines of lighter color and sometimes with rather definite marks of yellowish-green. It is not a showy gourd, but "breaks" are to be expected if it comes into cultivation. At Ithaca the seasons have not been long enough to bring this species into bloom, but it has made an attractive vigorous vine. It should be tried at least far south.

SPECIES 4. CUCURBITA FŒTIDISSIMA

The Calabazilla or Missouri gourd is a coarse perennial species, native in dry land from Missouri and Nebraska to Texas, Mexico, to southern California, emitting a fetid odor (*fœtidıs-sima:* very fetid). It is also known as *Cucurbita perennis* (perén-nis), but this is a more recent and not tenable name. The species is listed sometimes as a cultivated plant, but it is so weedy and unattractive in its native regions that it is not likely to meet with great favor. The rough leaves are gray-green, large and firm, triangular-ovate and not lobed

although perhaps angled with points along the margins; root deep and tuberous: staminate flowers to four inches long, yellow with green outside ribs and short calyx-lobes; pistillate flowers somewhat smaller: gourd globular to short-oblong, to three inches long and nearly or quite as broad, light green with broken light yellow or greenish-yellow bands, shell not very thick; seeds white, three-eighths inch long.

The gourds vary somewhat in size and in proportions of color. One lot before me as I write, fresh from the field, is predominantly green with the markings of secondary importance; another lot has broader yellow stripes, with the green less controlling.

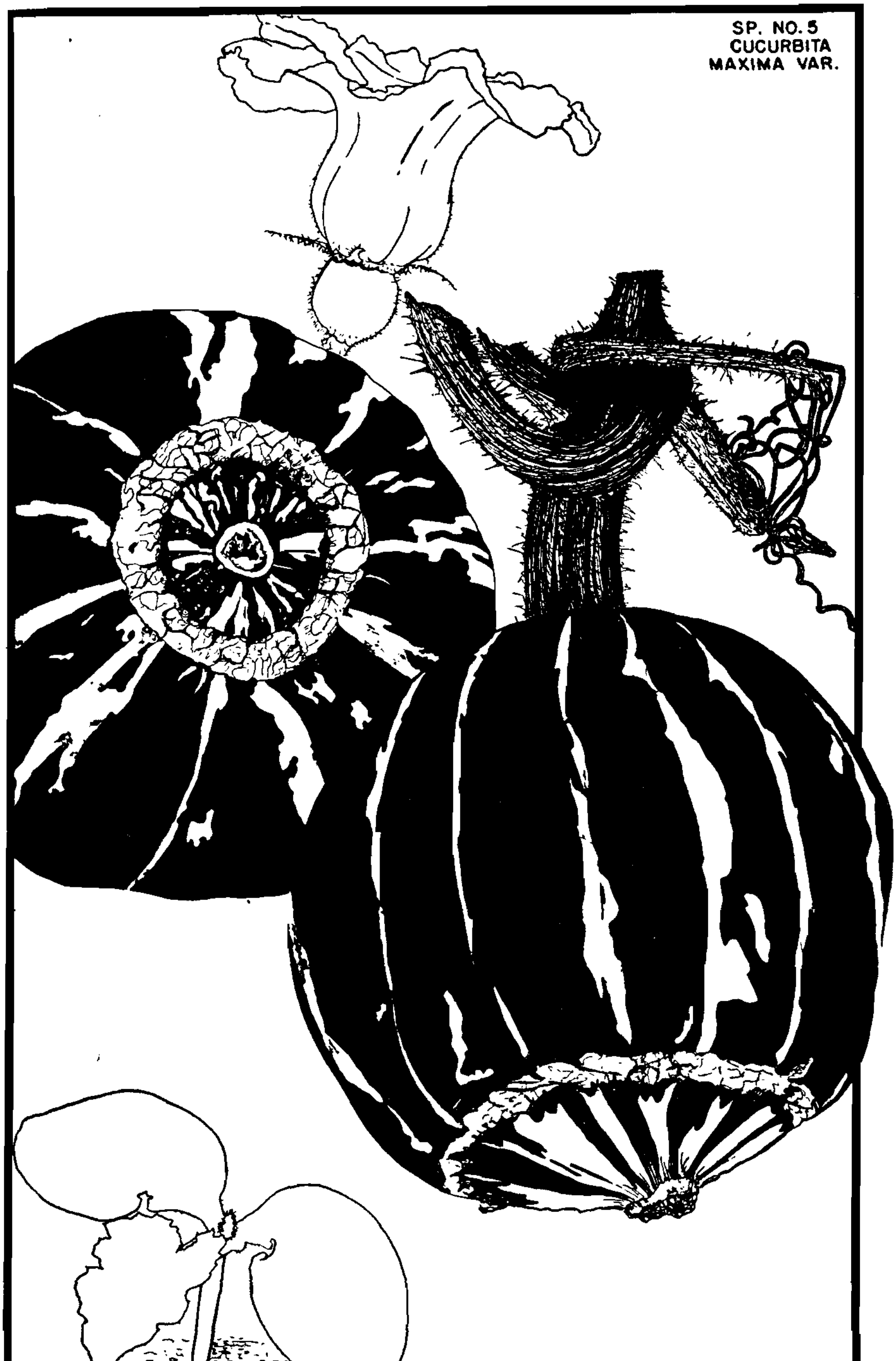
SPECIES 5. CUCURBITA MAXIMA var. TURBANIFORMIS

The edible Turban or turbaniform squashes are well known to gardeners, but it is not commonly recognized that some of the smaller kinds have hard and fairly durable shells, and they are attractive not only for their interesting shape but from the red color that is absent in the Ovifera gourds. The ornamental varieties are Turkscap and Small Chinese, which are apparently the same although different seed stocks may give slightly unlike results.

The "turban" in these squashes and gourds is formed by abortive additional carpels (rather than the usual three parts or cells) growing in the crown of the fruit and spreading the blossom end asunder to form a ring; the turban part is likely to be oddly marked by strong lines or plaits radiating from a center.

Turkscap gourd as I have grown it under this name and also as Türkenbund and Petite de Chine makes a handsome oblate or short-oblong hard-shelled fruit four inches across with one-third or one-half the apex composed of a turban which is a ring with several irregular splashes or rays of different widths of green, white and red within it. The body of the gourd is

THE NATIVE CALABAZILLA



TURKSCAP GOURD; SEEDLING

salmon-red to yellow-red; peduncle or stem very long and not soft or spongy as in the field forms of the Maxima squashes; seeds white, one-half to five-eighths inch long and three-eighths inch broad, with the thick rolled or margined edge characteristic of *Cucurbita maxima* (máx-ima), but in certain races they are nearly twice as large. As in other Maximas the leaves are rounded and not regularly lobed, flowers with a broad-based corolla as shown in the picture. Flesh of the Turkscap is yellow and thick, as if perhaps edible.

The regular Maxima squashes include such varieties as Hubbard, Marblehead, Essex, Warren, Bay State, Chili, Mammoth, which are meaty heavy long-keeping fruits (Latin *magnus*, large; *major*, larger; *maximus*, largest).

Nativity of *Cucurbita maxima* is not yet determined but archeological and historical evidence points to an American origin. Actual evidences in peduncles, rind or seeds have not yet been found in Indian remains, whereas they have been discovered for *Cucurbita Pepo* and *C. moschata*.

SPECIES 6, *a,b*. CUCURBITA FICIFOLIA

Malabar, Siamese or Angora gourd is the most vigorous species I have grown. One year I measured the length of vine grown in open ground at Ithaca from a single seed, and the total of main stem and branches was 825 feet. This luxurious plant is supposed to be native in eastern Asia, whereas all the other Cucurbitas are either known or assumed to be of New World origin. It is quite unlike the other members of the genus. The fig-like (ficus-like) leaves give it the name *ficifò-lia.* It has been known also as *melanosperma* (melanospér-ma), which means "black seed."

The plant is said to be perennial in warm countries, but I have grown it always as an annual, and it produces its heavy showy fruits freely in the open ground. The gourd, or "melon" as called by the French, is short-oblong to nearly globular, five to six inches long and nearly or quite as broad, regular, lively

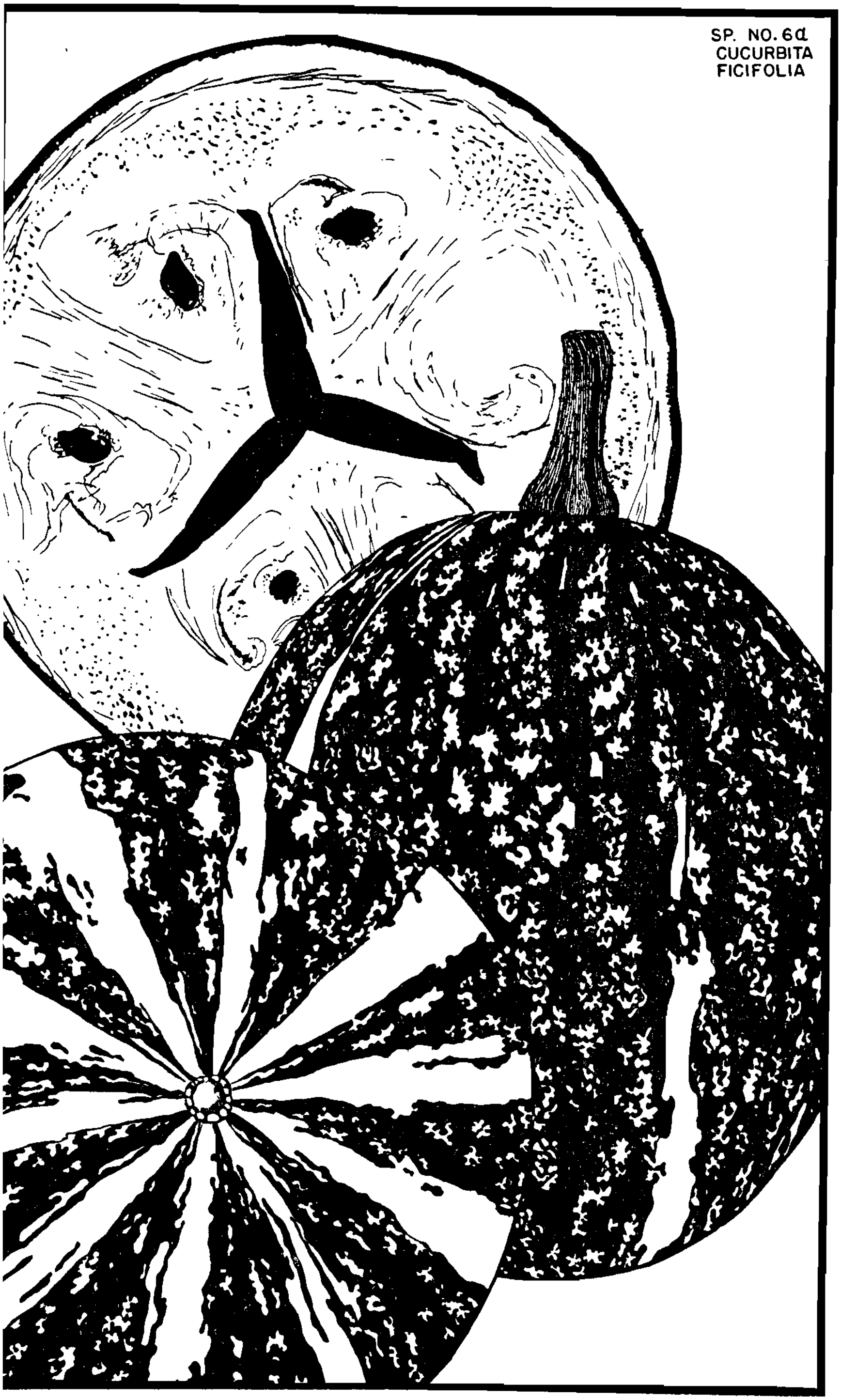
mottled green and usually with stripes of white running lengthwise to the apex, but variable in size and markings; the interior is white, solid unless for a thin cavity in the center marking the three carpels or divisions; shell not durable aside from the interior but the fruit will keep for months; seeds are black or brown-black, flat and thin, about three-fourths to seven-eighths inch long and one-half inch broad, without markings.

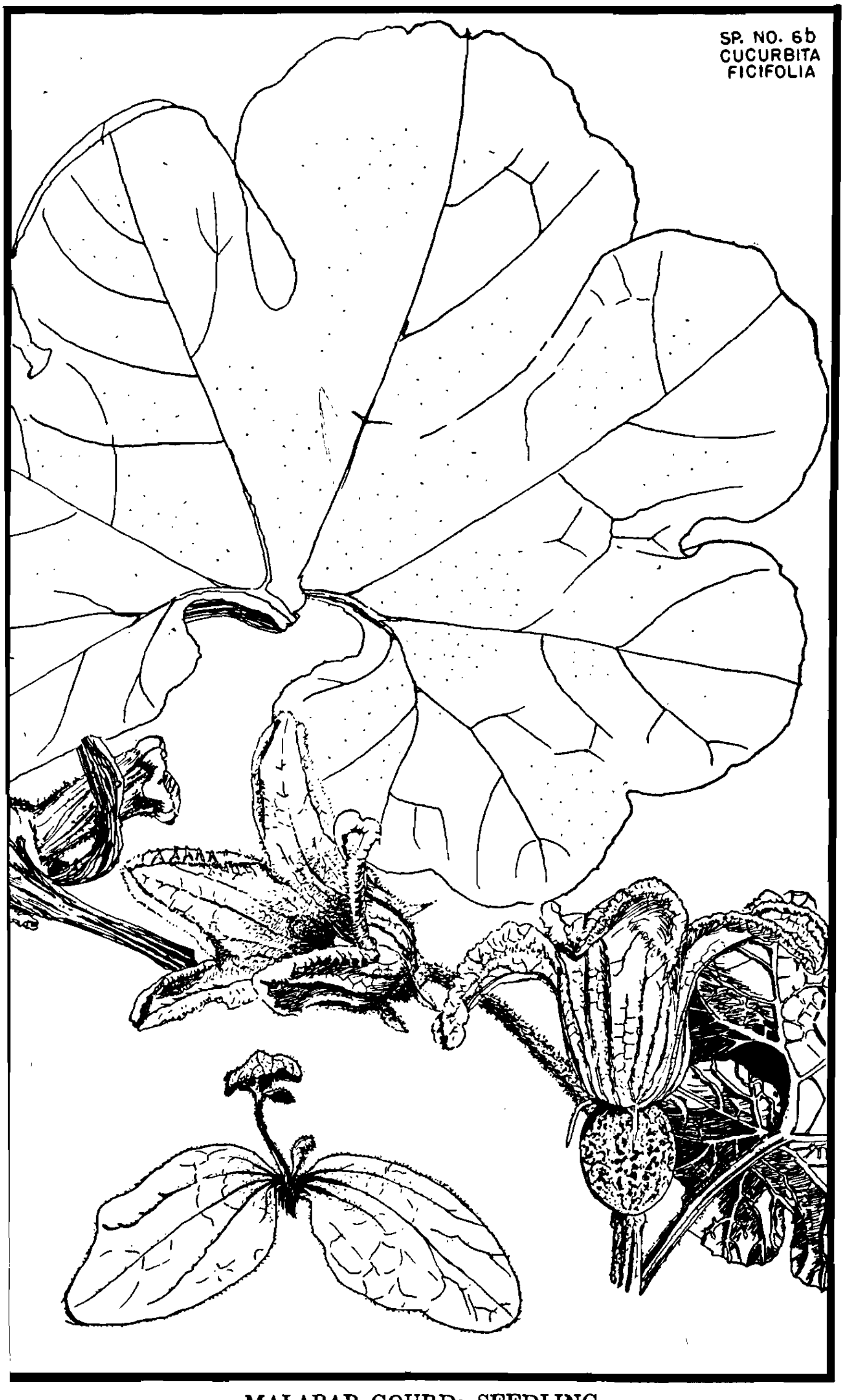
A *Cucurbita argyrosperma* (argyrospér-ma) is in cultivation with very large and margined seeds, the body white and the broad edges gray; fruit is like that of regular *ficifolia* except that the white marking predominates; leaves apparently less deeply lobed. The name *C. argyrosperma* (silver-seeded) appears to be of recent introduction, and I suppose the plant to be only a variant of *C. ficifolia.* I have had the fruit and hope to grow the plant another year.

Leaves of *C. ficifolia* are abundant, cordate-ovate, closely or openly five-lobed with the parts rounded. Flowers are yellow to light orange, four or five inches across, with obtuse corolla-lobes. In some countries the fruits are eaten. They look something like a citron watermelon. They keep over winter in good condition and color.

SPECIES 7. CUCUMIS MELO, VARS.

We have now left the Cucurbitas and come to Cù-cumis (a classical word), genus of the melon (muskmelon) and cucumbers. *Cucumis Melo,* the melon, native probably in Asia, is known to us in several botanical varieties grown for human food, and it is not generally recognized that other varieties are raised for interest and ornament. With us muskmelons are commonly called cantaloupes although the true cantaloupe is seen in this country, if at all, only in experiment or test grounds. The watermelon is quite a different plant, of the genus Citrullus, native in southern Africa but now run wild in parts of tropical America. With the usual edible melons we shall not concern ourselves in this book. None of the plants we shall discuss bears a hard durable shell.


SP. NO. 6a
CUCURBITA
FICIFOLIA



MALABAR GOURD; SEEDLING

As *Cucurbita Pepo* runs into many strange races and as *C. maxima* departs into the turban squashes, so *Cucumis Melo* varies into many forms that would not be recognized by persons in general as having any relationship with the muskmelon. If the person were to observe foliage and flowers and seeds, however, he would see the connection at once. These odd groups differ from the muskmelon tribes particularly in size, shape and texture of fruit, the products being small and often not edible. They are not true gourds, but as they may be utilized for the same or similar purposes they may be included in this book which, as was stated at the outset, is designed to discuss plants not recognized as coming within its title by persons who may use it. The interest will thereby be broadened.

The naturally wide variation in fruits of the muskmelon tribes and tendency for the fruit to "run out" under poor conditions and lack of selection, combined of course with poor observation, are probably reasons for the widespread but erroneous notion that melons and cucumbers commonly mix.

Dudaim. Species 7, *a.*

We may begin our exploration of the regularly cultivated Melo forms with *Cucumis Melo* var. *Dudaim.* This plant was named *Cucumis Dudaim* by Linnæus, 1753, and the habitat was given as Egypt and Arabia; he employed the levantine (Hebrew) name for it. It is also called *Cucumis odoratissimus* (very odorous). It is now accounted only a form of *Cucumis Melo,* however, and the nomenclature therefore changes. The oblate-globose fruits, which are the size of a small orange, are prized for their strong and delightful fragrance as well as attractive coloring.

The plant is a slender vine with flowers larger than in Melo proper, leaves long-ovate, cordate and apex obtuse and sometimes lobed, narrow white seeds three-eighths inch long; fruit three inches or less across and somewhat less in height, with deep yellow stripes or bands between the segments of orange or reddish-brown body color, the yellowish flesh scant

and scarcely edible. It is sometimes called Queen Anne's Pocket melon.

Chito. Species 7, *b.*

Mango melon or Lemon cucumber is *Cucumis Melo* var. *Chito,* of undetermined origin but supposedly Asian, sometimes grown for pickling as well as for ornament although not as showy as Dudaim. It has been known under several names in the trade, as Melon apple, Vine peach, Orange melon, Vegetable orange. Ordinarily it is grown for the making of mango pickles. Of course it has no relation with the true mango, which is a tree fruit with a single large seed. The name Chito is probably a geographical word, and it has long standing.

Fruit of Chito is nearly globular to short-oblong, two to three inches across or when oblong reaching about three inches long and less than two broad, greenish-yellow to light yellow and without markings unless faint greenish lines; surface lightly pubescent. The flesh is white and cucumber-like. Seeds are plain, one-fourth to three-eighths inch long, white. The plant is slender, bearing rather small shallowly lobed leaves.

Snake cucumber. Species 7, *c.*

Although not a gourd, nevertheless *Cucumis Melo* var. *flexuosus* (flexuŏ-sus) is likely to be confounded with the Serpent gourd which we shall meet in Species number 13, and the fruit is odd and interesting in itself. In foliage and flowers and seeds it is a Melo, but its very long slender crooked fruits are apparently as different from a muskmelon as one is likely to imagine. The fruit or melon at the bottom of the plate was grown by me in 1920; it was forty inches long following the curve and an inch or so thick, green becoming yellowish, with many shallow furrows running lengthwise, slightly pubescent, flesh white and acid and cucumber-like; seeds white and plain, three-eighths inch long. The leaves were broad, almost kidney-shaped, yet some of them on young shoots were shallowly lobed.

Thirty-five years earlier than that date I had grown this plant as "banana muskmelon," and had wondered at the long

THE FRAGRANT DUDAIM

hairy often curved ovary on the pistillate flower, and the large corollas. I have grown it also from French seeds; from this crop the two upper pictures of fruits were made, the one at the right measuring about one foot horizontally across the loop.

The Snake cucumber has been known for centuries and its origin is lost. Linnæus described it in 1763 (in his second edition) under the name *Cucumis flexuosus* and questioned whether its habitat might be India. It is still offered in seed catalogues, as a curiosity. One of its oddities is the habit now and then of bearing short broad fruits as well as snaky ones. Ripe fruit smells like a melon. It is said to be usable for pickles.

Agrestis. Species 7, *d.*

The small-fruited semi-wild or undeveloped forms are classed as *Cucumis Melo* var. *agrestis* (agrés-tis: Latin, pertaining to fields or country). This is not a satisfactory disposition of these subjects, inasmuch as the plants appear in many forms that may have little relation with one another; however, it is sufficient for our purpose, seeing that we shall discuss only a few of them and not in a technical way.

Although *Cucumis Melo* is supposed to be central Asian, yet apparent wild forms of it turn up in unexpected places about the world. Perhaps it has facility to perpetuate itself in small-fruited forms from seeds scattered from cultivation. Thus in 1859 Charles Naudin, whom we have met, described a small Melo from Texas he thought might be an escaped form of var. *Chito;* three years later he concluded, from additional evidence, the plant was indigenous and he named it *Cucumis Melo* var. *texanus.* It bore a slightly fragrant spherical smooth yellow fruit the size of a good Reine Claude plum. This plant has not been accepted as indigenous, and is now subordinated in *C. Melo* var. *agrestis.* Naudin described botanical varieties of Melo, or supposed related species, from widely separated parts of the world.

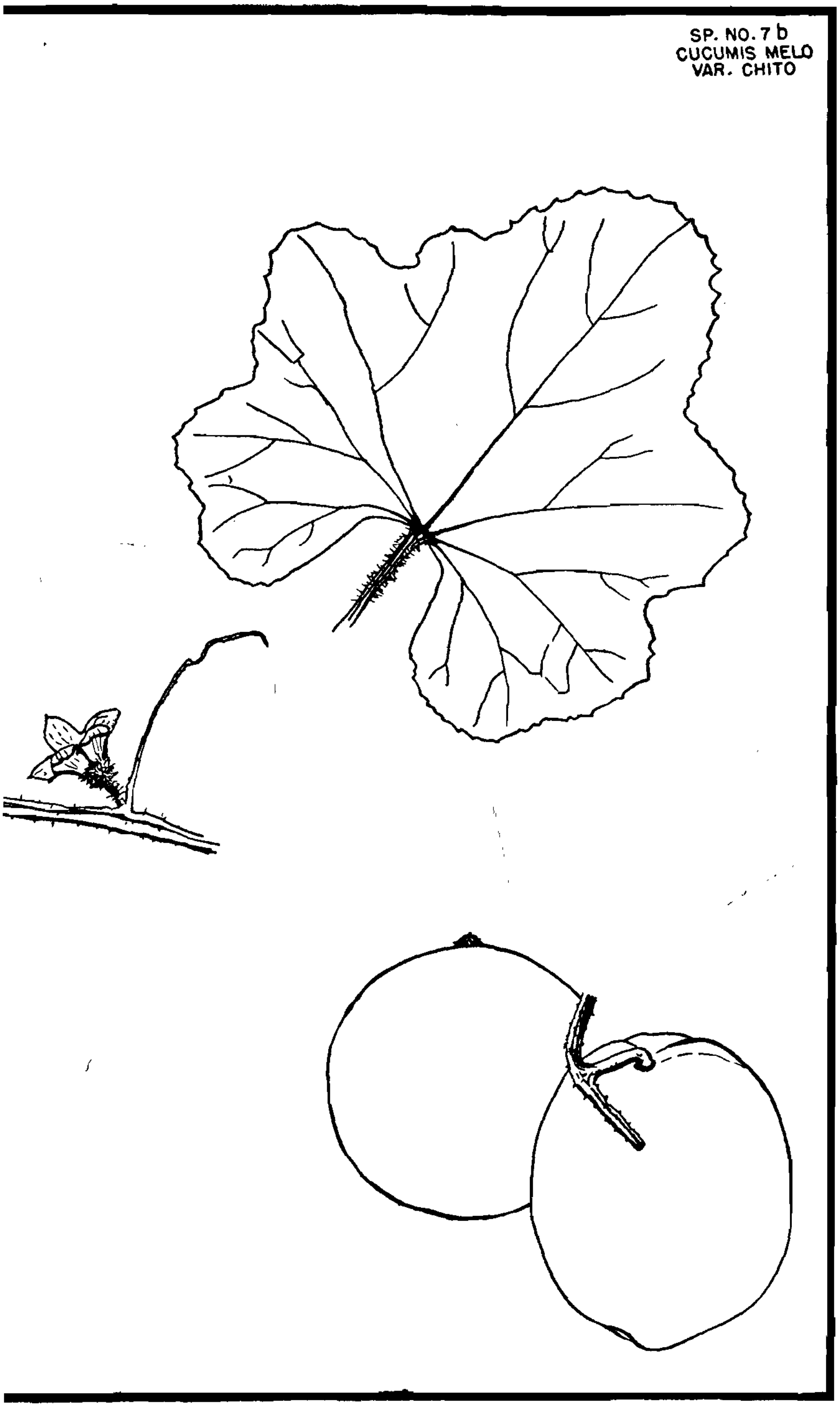
In 1850, Asa Gray, leading North American botanist, founded the genus Sicydium for a Texan plant he named *S.*

Lindheimeri in compliment to Ferdinand Lindheimer of New Braunfels, Texas, who discovered it. The plant described by Gray has much-lobed leaves, a fruit or berry one to two inches in diameter and red when ripe. An older genus Sicydium had been established, however, and a new generic name was made for Gray's Sicydium, it being Maximowiczia in compliment to C. J. Maximowicz, distinguished Russian botanist. Subsequently a new complication has arisen in respect to the name but this need not concern us here; nor, in fact, do we need to pause with *Sicydium Lindheimeri* except as we shall pick up the name for a cultivated plant in the course of a paragraph or two.

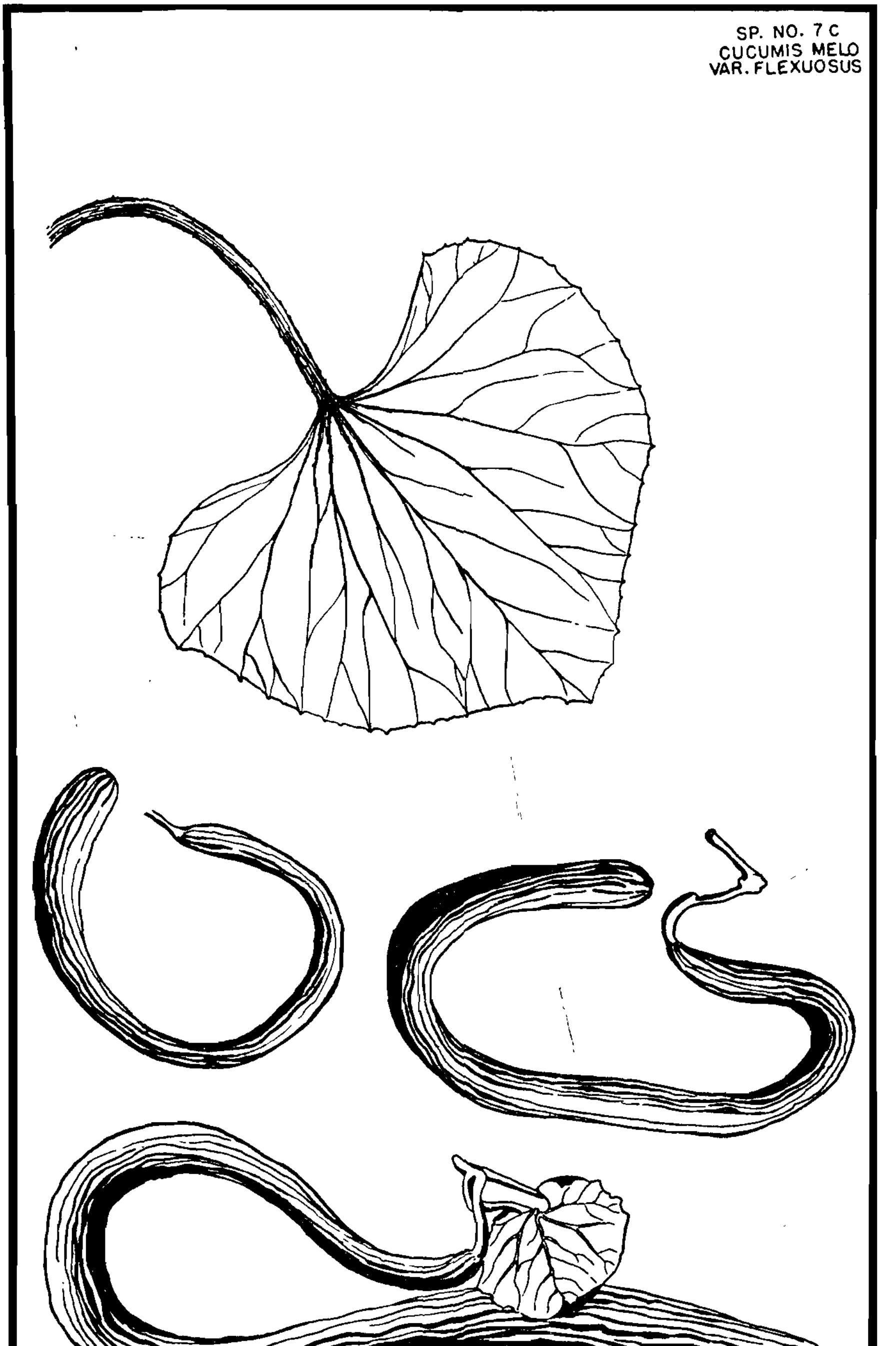
Last year a correspondent sent me a dried fruit, size of a plum, he picked up in swamps of Louisiana to ask the name of it. I did not know it and this year I grew the plant from seeds taken from his fruit. It turns out to be an unreported form of *Cucumis Melo* var. *agrestis*. How it came in Louisiana is to be determined. Whether it is the same as one of the things from other countries described by Naudin and somehow scattered to the United States is subject for further study.

In the meantime, we may be told that it is an interesting plant worth growing in the garden even though not showy. Seeds were sown in the open ground at Ithaca May 24th, 1936; the plants grew well, bloomed and fruited freely and were dead before frost apparently of old age. Leaves are small, cordate-ovate, rounded and not lobed; flowers smaller than in muskmelon; fruits slightly oblong, to one and one-half inches long, greenish-yellow with stronger green irregular mottled broad longitudinal stripes or bars, without pronounced odor, surface minutely pubescent; seeds white, scarcely one-eighth inch long. It differs in foliage and other respects from var. *Chito*. This plant is shown in foliage, flowers and fruit in the picture Species no. 7; the plate also has a fruit of *Cucumis dipsaceus* and of *C. Anguria*.

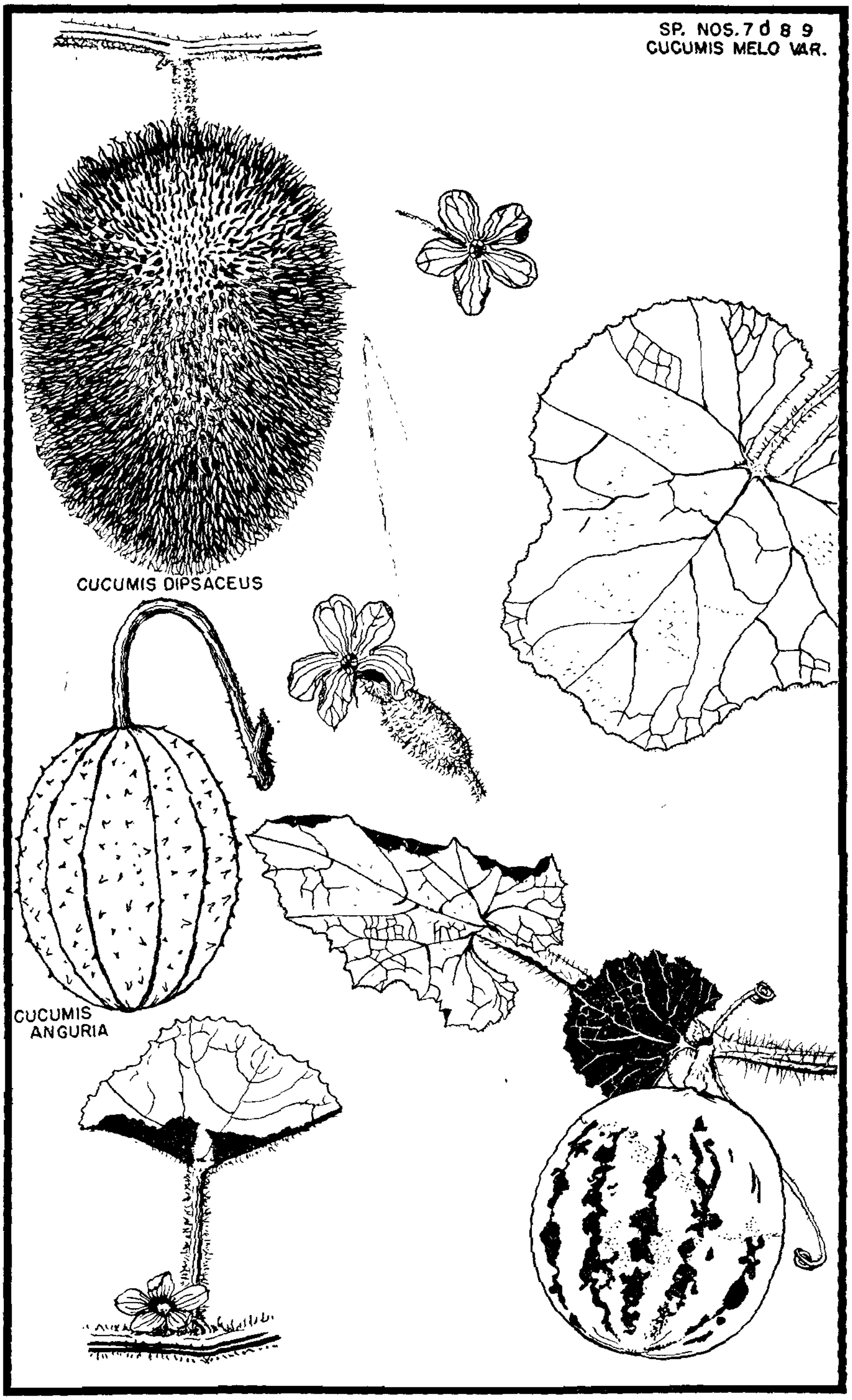
More than ten years ago I received from Europe seeds labelled *Sicydium Lindheimeri*. The plants, however, turned



THE CHITO GOURD OR MELON



THE SNAKE CUCUMBER OR MELON



VARIOUS FORMS OF CUCUMIS

out to be *Cucumis Melo* var. *agrestis*. It yielded me oblong-pyriform smooth fruits three and one-quarter inches long and two and one-half inches broad, without definite odor; they were greenish, with broad stripes of mottled yellow and alternate narrow furrow-like strips of whitish; seeds were white, narrow, three-eighths inch long. The flowers were very large.

Two years later I had also from Europe seeds packeted *Cucumis odoratissimus*, and the plants proved to be an unusual Melo form and not the Dudaim as the name would indicate. The fruit was seven inches long, narrow like a cucumber but without the tubercles or spines, not odoriferous, light and dark green in stripes; seeds white, narrow, nearly three-eighths inch long. The larger leaves tended to be lobed and long; flowers not large.

These paragraphs on *Cucumis Melo* var. *agrestis* may be of small interest to the general cultivator, although they should stimulate the curiosity of any critical plant grower. They suggest that the contents of seed packets may not have respect for their names and indicate there are things in the world beyond our dreams.

SPECIES 8. CUCUMIS ANGURIA

Two kinds of fruits are called gherkins. One is only a small cucumber, much used for pickles. The other is a very different fruit, *Cucumis Anguria* (Angù-ria), native in Central and South America and the West Indies; the small hard fruit is also pickled. A single fruit on its curved stalk is shown in the picture, Species 8.

This true or West Indian gherkin, or Burr cucumber, known also as Gooseberry gourd, makes a slender annual vine usually grown on the ground but provided with many short tendrils that fit it for climbing, leaves small and rough, deeply three-lobed and the side parts again lobed; flowers small; gherkins oblong or ovoid, full grown ones about two inches

long and more than one-half as thick, light yellow at maturity, furrowed, sparsely beset with short protuberances; seeds narrow, plain, about one-fourth inch long.

Burr cucumber produces satisfactory ornamental fruits, interesting in shape and size and prickles, and it is a good keeper. Its decorative interest is attested by the horticultural names *Cucumis Grossularia* and *C. grossulariæformis*, which refer to its gooseberry character, and *Cucumis erinaceus* which connotes a hedgehog.

SPECIES 9. CUCUMIS DIPSACEUS

Teasel gourd (dipsà-ceus: from Dipsacus, the teasel) is an annual vine native in Arabia and over a wide territory in Africa. It has long been grown for its oblong very densely bristly but not prickly fruits, which are two inches or somewhat over in length and more than one-half as broad. The fruits long retain their green color, but become straw-color and last indefinitely. The little plain white seeds are less than one-fourth inch long.

Leaves of Teasel gourd are small, rounded, deeply cordate, not lobed: stem of vine is prickly-rough; tendrils abundant, the plant climbing well on trellis or brush or bushes.

Long ago I grew this vine, but in later years I failed to find seeds. This spring in the far southern part of the Mexican peninsula Baja California I found it abundantly growing over brush-piles and roadside shrubbery as if it were a native plant. It must have become established a long time ago as a run-wild plant. It was on both sides of the peninsula, near the Gulf of California and the Pacific Ocean, in dry hot country. Burrs were brought home, seed was planted at Ithaca May 24th, 1936, and it fruited abundantly before frost. A burr is at my hand as I write; and now in January, as I read proof, it still hangs over my head as green and bright as when I took it from its vine in October.

SPECIES 10, *a,b,c*. LAGENARIA SICERARIA

Here we come to the plant longest known under the name gourd and usually accorded that appellation in literature. It is a long-running vine, musky-scented, white-flowered, heavily-foliaged. In its fruit it presents astonishing diversity. On my table as I write is a full-grown fruit I picked up in Nara, Japan, only three and one-quarter inches long; it is shown half size at the lower left of the picture, *b*. Beside it on the table is a snake-like fruit I acquired on one of the West Indies, about two feet long and the shell cut into ridges over which a comb may be raked for music to console the tedious hours; and yet this specimen is by no means a large gourd of this species. Fruits are frequently more than three or even to six feet long; some of the kettle-shaped kinds are of extraordinary capacity.

Aside from Lageneria, there appears to be no general name for all the gourds of this class. The word Calabash is often used in a generic sense, but this is likely to be confused with the gourd-like fruits of the calabash tree, native in tropical America. Certain catalogues appear to restrict the word to a particular kind of Lagenaria, but without definition. From the stem-end of certain slender Calabash gourds pipes are made.

Young gourds of Lagenaria are eaten in some countries, but in North America they are grown for curiosity, ornament and for use as dippers and as receptacles for either solids or liquids. A small kind is raised in Paraguay as utensil for the drink, maté. It is not unusual to see Lagenaria gourds hung in trees for bird-houses. The uses are many. The plant itself is useful as a screen and for general ornament, inasmuch as it grows rapidly and the large white tissue-like flowers are showy at nightfall and early morning.

Although excessively variable in its fruit as well also as in stature of vine and sizes of leaves and flowers, it is now held by all botanists to represent but a single species. Its original place is probably tropical Africa and eastern India, but for centuries it has been distributed over the world in warm-

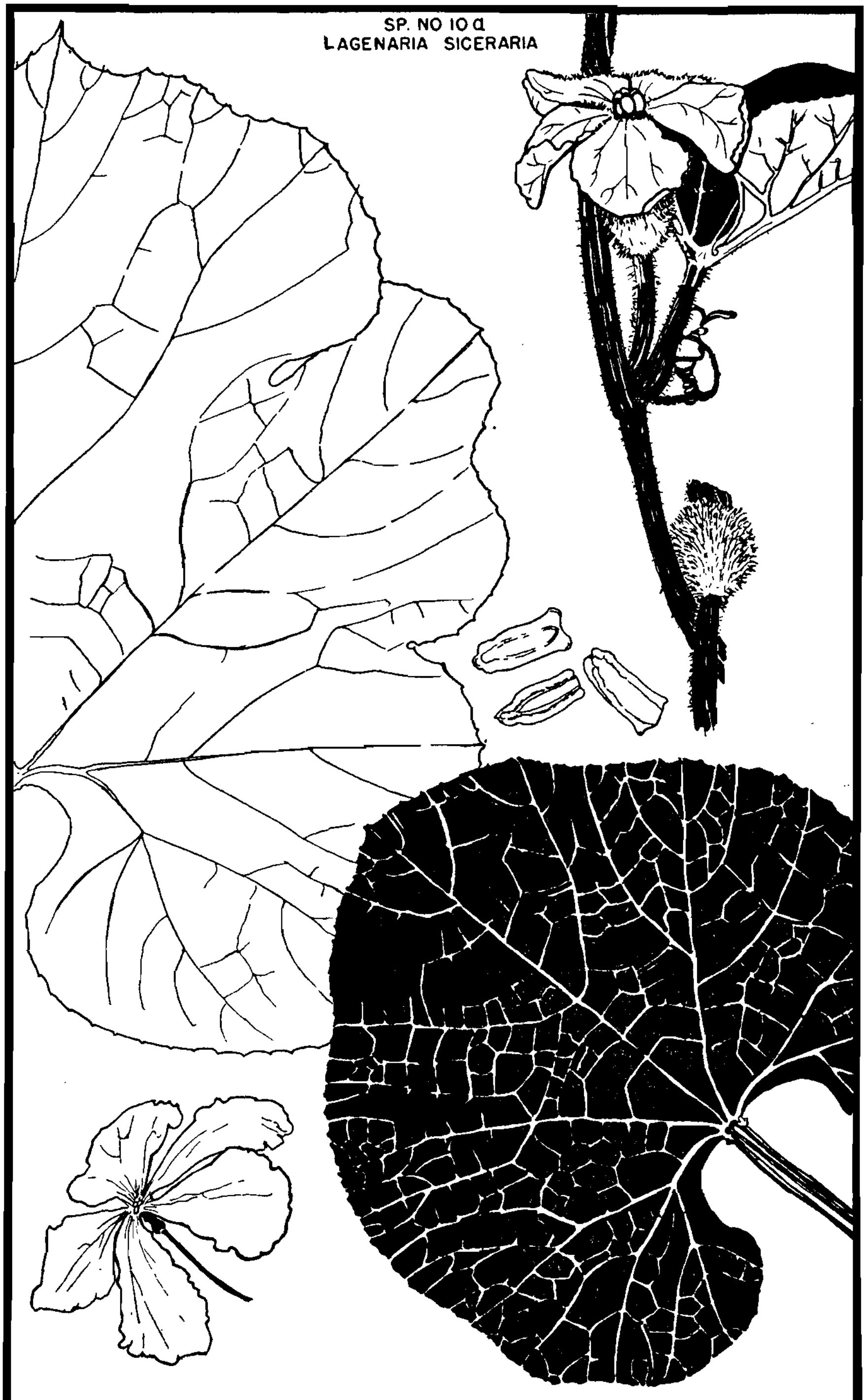
temperate and tropical regions. One is not surprised to see it in travels in any warm country, often appearing to be truly wild.

A plant so widely distributed and notably variable is certain to have picked up many names for itself in the course of its travels. This is true even of the botanical names. Some of the herbalists called it Cucurbita; so did Linnæus in 1753,—*Cucurbita lagenaria* (lagenà-ria), the word *lagena* being Latin for flask or bottle. When Seringe studied Cucurbitaceæ he separated the plant, in 1825, as a distinct genus, Lagenaria; and so it remains until this day. The binomial at first bestowed was *Lagenaria vulgaris* (vulgà-ris), the second word signifying "common"; by this name the plant is usually known in horticultural writings. In 1786, however, Duchesne had named the plant *Cucurbita leucantha* (leucán-tha: white-flowered), and on the rule of priority this name had preference and the gourd became *Lagenaria leucantha.* But as early as 1782 Molina had described it in a work on Chile as *Cucurbita siceraria* (*sicera* is a drinking vessel, and the Indians used the shells for beverage utensils), the description being in Italian; recently this name has been transferred and we now have *Lagenaria siceraria* (sicerà-ria). The plant remains the same. The farther back we trace the names the less is the likelihood we shall find an older one; and we are not allowed to go back of Linnæus in 1753.

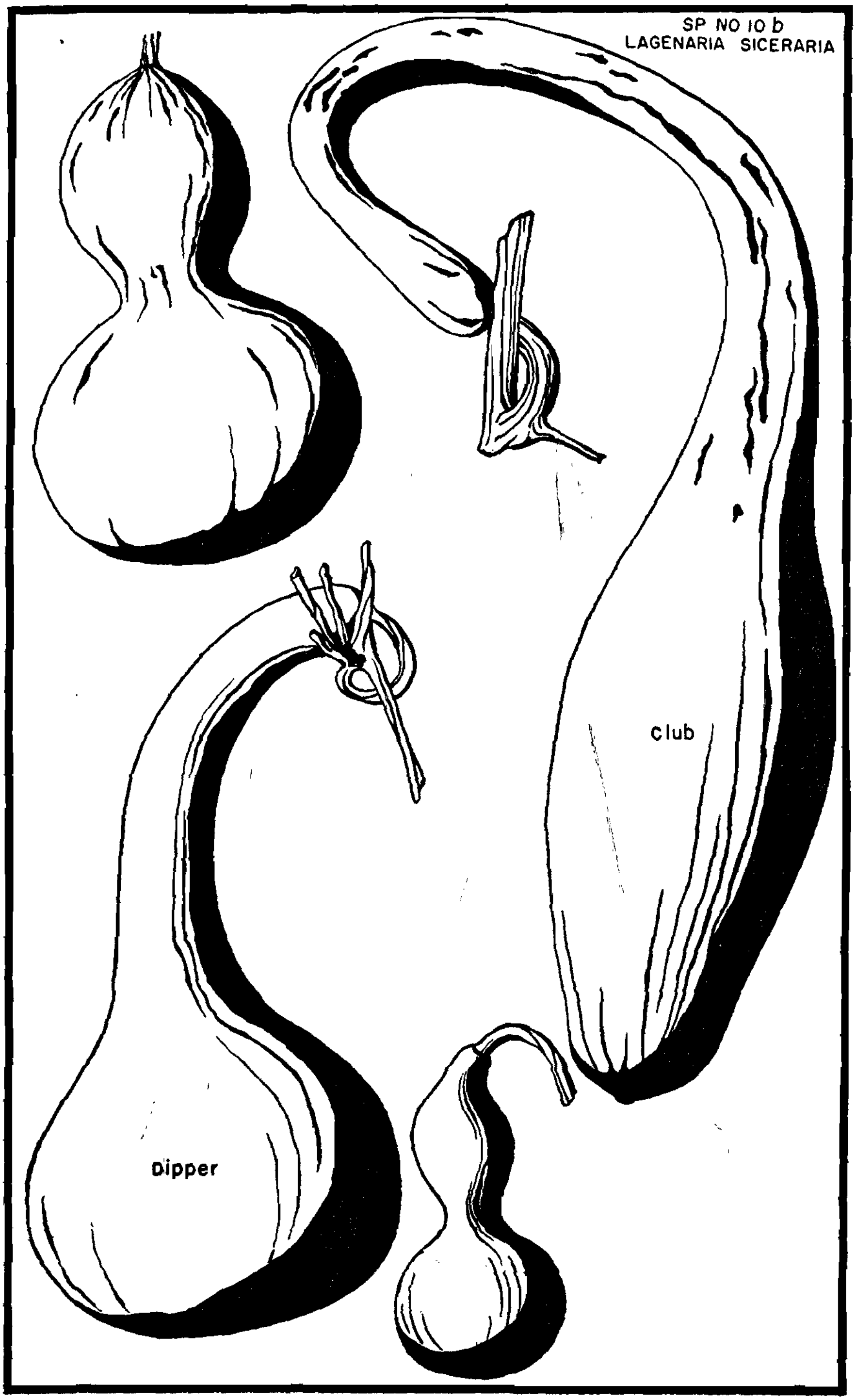
Lagenarias are simple of cultivation. They require a long season to produce a full crop of gourds. In northern regions they should be given a warm "quick" soil with open sunny exposure. Seeds may be planted directly in the open, or in short-season climates they may be germinated inside in pots or started in the field under covers. Provide abundant room. The larger kinds will rampage thirty or forty feet or more.

If the grower desires the best satisfaction with the raising of the Lagenaria gourds, he must be abroad with the dawn, when the dew is still on the summer day and before the fragile flowers have begun to collapse in the warming sun. Any inducement of this kind makes a better gardener.

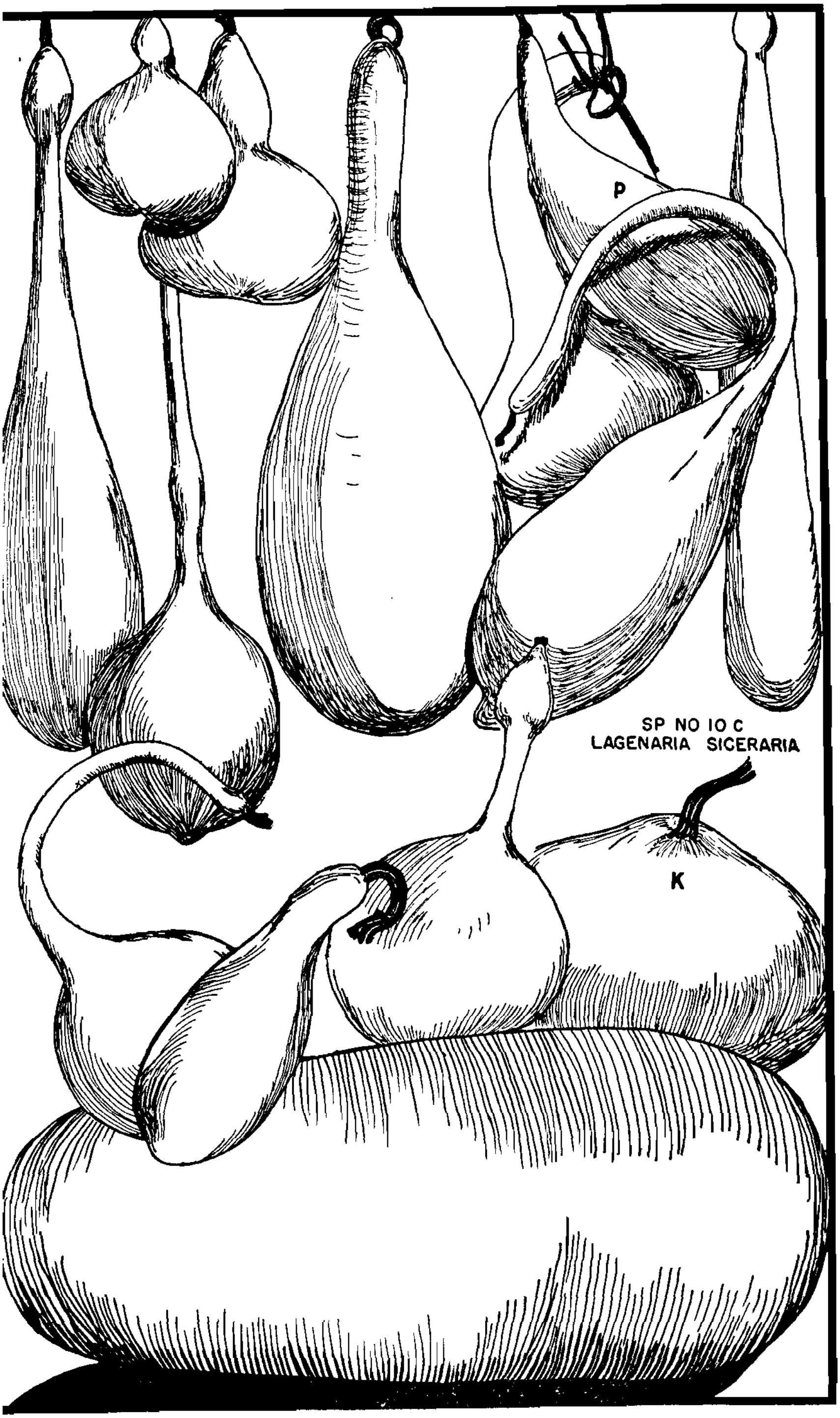
Herbage of the Lagenarias is soft and profuse. Leaves are



ITEMS IN LAGENARIA



COMMON FORMS OF LAGENARIA



THE MANY FORMS OF LAGENARIA

broadly cordate-ovate, margins irregular but not lobed; very large ones may measure fifteen inches across. The forked tendrils are very long. The thin lace-like white corollas collapse in sun; large staminate flowers may be four inches across; fruits (gourds) are commonly uniform plain green except that they may be lighter colored on the under side if they lie on the ground, with only indefinite longitudinal marks if any at all, although perhaps becoming yellowish, not ornamental. Striped Lagenarias are mentioned, but I have not seen them. Shadings in the pictures do not represent colors.

Shells dry very hard, and last until they wear out by use. Seeds are variable, tan or grayish, oblong, angled and irregular in outline, three-fourths inch long more or less and about one-third as broad or in some varieties almost square, the thick margins set off by a thin light-colored ridge extending around the face.

Forms of Lagenaria are many. Some of the named kinds may not come very true to type, and standard descriptions are lacking for most of them. They are hardly established varieties as much as classes of shapes, of which a half dozen may be described. Classification and nomenclature of the cultivated Lagenarias are treated ably as recently as 1924, from the technical point of view, by Harms in Das Pflanzenreich. The forms in cultivation are arranged in eight groups, following Naudin, but this treatment can hardly be used for the kinds at present horticulturally known in American gardens.

Bottle and *Dumb-bell.*

Gourd constricted in the center so that the hand may grasp it, the lower end much enlarged and globular, upper part above the isthmus not thick. This name represents a general shape rather than size or season. It ranges from three to twenty and more inches long with varying cubic capacity. The bottle form is shown in the upper fruits in the Matthiolus picture (Pre-Linnæan Gourds). The upper left and lower right in Species 10, *b* represent a shape sometimes called Dumb-bell gourd, the two ends being nearly of same size.

Club.

Very long, to three feet and more, with a gradually swollen head and a very long narrow part like a handle. Usually the fruits of this general form are curved, as in upper right Species 10, *b*. When straight and long they are called Hercules Club. A long slender straight form with knob on the end of the handle is Knob Kerrie. Forms of Club gourds are seen in the two bottom cuts in the picture Pre-Linnæan Gourds, as well as in Species 10, *c*.

Dipper.

Differs from the Club gourds in having the head broader, more definite, and more suddenly expanded; usually a shorter fruit than the other. The handle may be straight or slightly curved. Example is on left in Species 10, *b*. In some of the Dipper gourds the handle part is very slender and much curved; these may be called Siphon or Retort gourds; one is seen near the bottom left in Species 10, *c*.

Powder Horn.

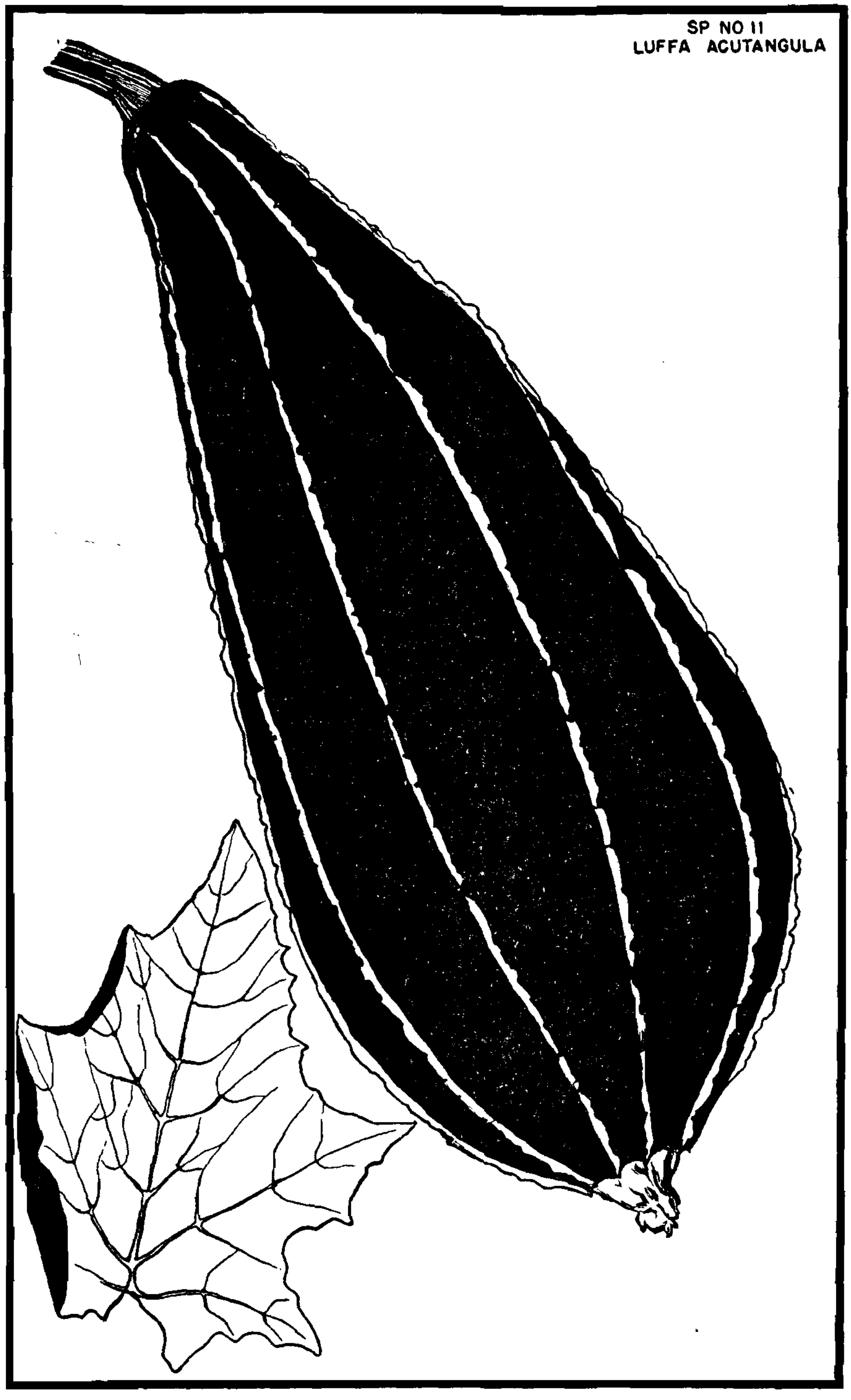
Curved and relatively short shapes with gradual enlargement toward the apex, the narrow part usually slightly curved and not forming a long handle. A gourd of this type may be seen at P in Species 10, *c*.

Kettle.

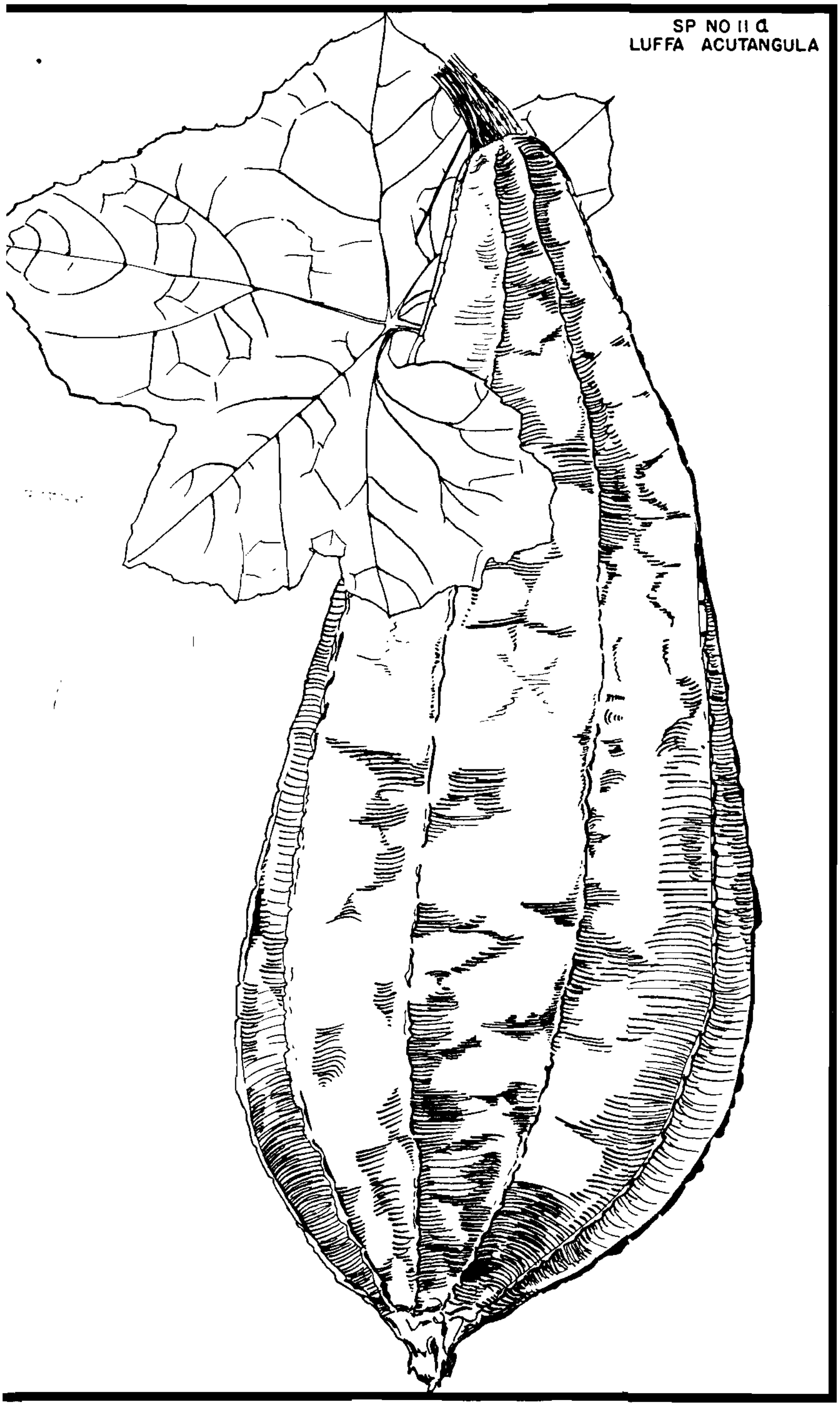
Usual form is seen at K in Species 10, *c*. It is much broader than long, with only a short taper toward the stem. Such gourds are often very large, and may be used as commodious containers and baskets. Extreme of this type are the Flat gourds, without taper toward the stem; not often seen in this country.

Trough.

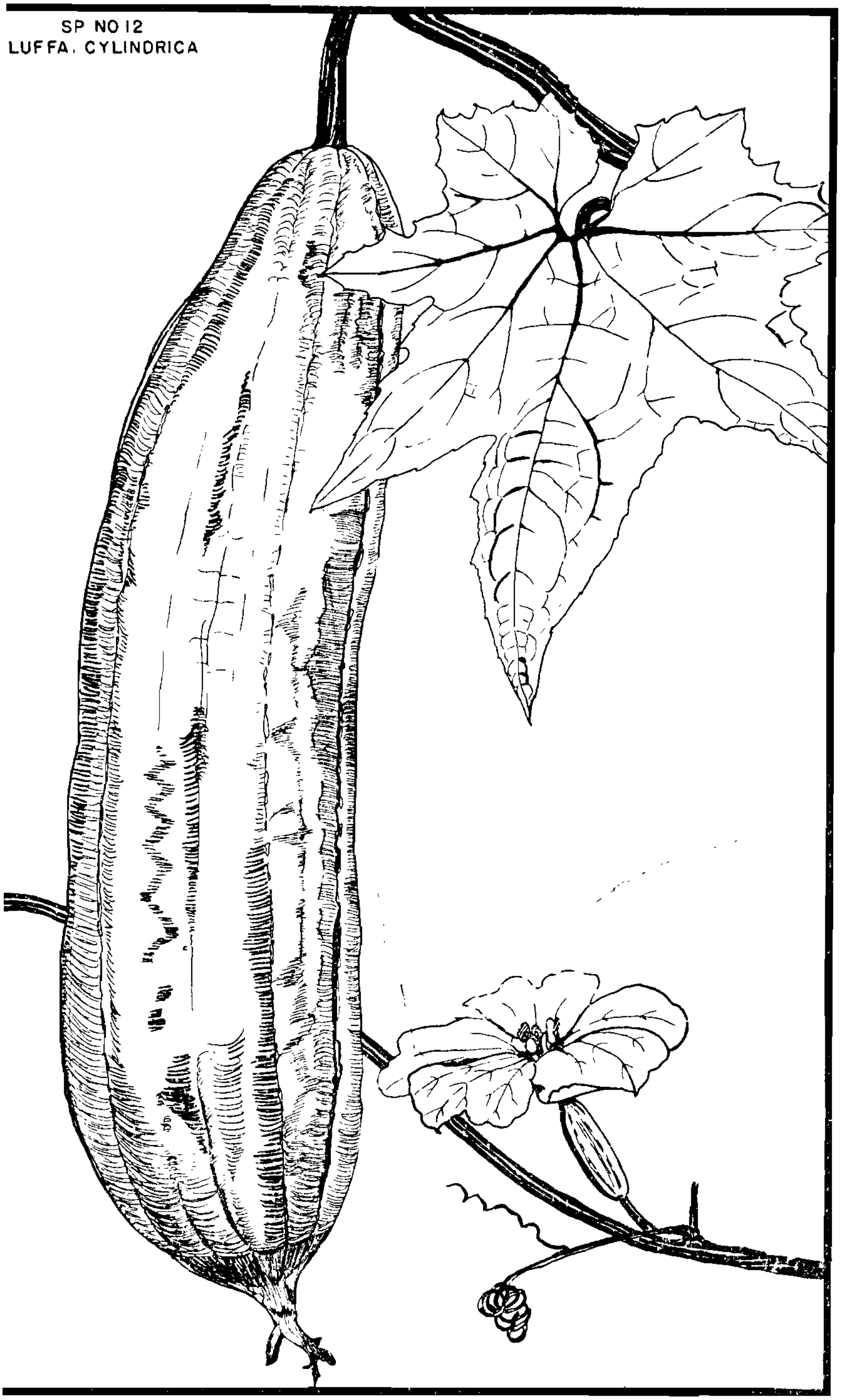
Gourd long, nearly cylindric throughout, lacking the "handle," one and one-half feet long more or less, without distinctive external features except shape. The best example I have seen of this gourd I obtained up the Orinoco River in Venezuela: it is the bottom example in Species 10, *c*. It is



ONE OF THE LUFFAS



ONE OF THE LUFFAS



LUFFA. DISHCLOTH GOURD

apparently unusual. Sugar-trough gourd, as I have grown it, is of this general capacious conformation but with a more tapering stem end.

Probably the oddest of the Lagenarias is the Dolphin or Maranka gourd, seen at the bottom of the last picture in this book. It is a hard-shelled fruit, much darker in color than the usual grayish-green and shining at maturity. Ten length-wise ridges are more or less apparent on the expanding part of the handle. These ridges increase in size on the body of the gourd and become confused in their direction, cross-ridges develop, depressions are inclosed, and strong points or knobs arise, giving the gourd a contorted look. Seeds are large. The specimen before me, from which the drawing is made, is twenty-one inches long following the curve.

The above categories do not exhaust the ranges of Lagenaria gourds. The picture Species 10, *c*, shows others, mostly odd or unusual; and any considerable growing collection from seeds of different countries would yield other kinds. The species is indeed protean in its fruits.

SPECIES 11, 12. LUFFA, THE VEGETABLE SPONGES

The Luffas are a half dozen species, mostly native in the tropics of the Old World. Two of them are widely cultivated, and they thrive in northern parts of the United States, although requiring a long season for full fruitage. They demand no special attention in cultivation except to have the advantage of warm prompt soil and exposure to sun.

There is no vernacular for these plants as brief, easy and euphonious as the technical generic name. In fact, Luffa was adapted by early authors from an Arabic vernacular. In English the two species in cultivation (particularly the second one) are called Vegetable Sponge, Dishcloth gourd, Rag gourd, because the fibrous interior makes a good sponge-like or cloth-like product when dried and the seeds removed; this product is an article of commerce. Young fruits are eaten in some

countries. The mature fruit may be allowed to dry and it will keep indefinitely if one desires the gourds for curiosity or decoration; the rind becomes more or less papery. The apex breaks away, as a cover, and the seeds are discharged.

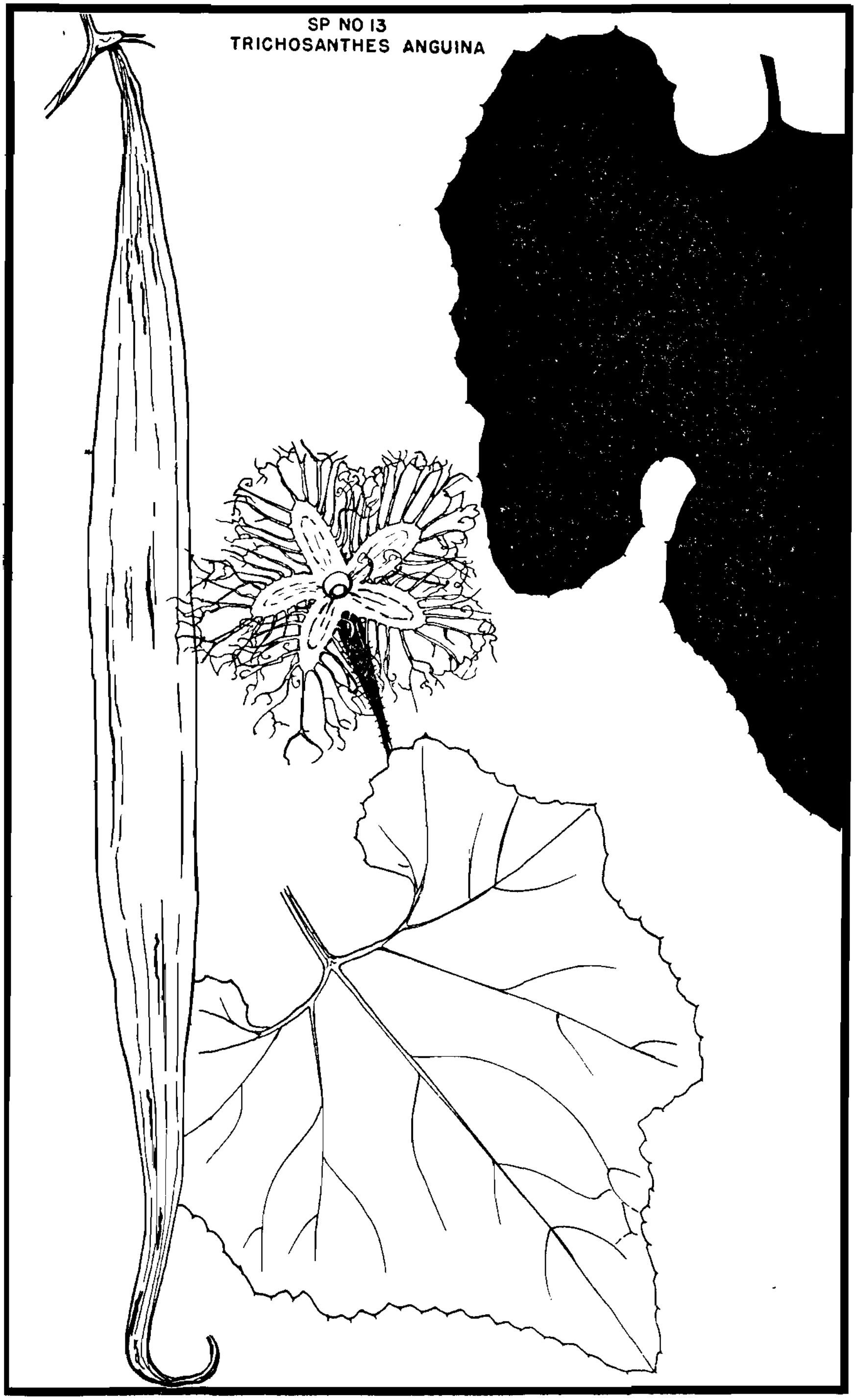
Luffa fruits are green becoming straw color, with ridges, lines or furrows and perhaps crosswise checks but they lack brilliant colors. Flowers are yellow or whitish, large and showy, the pistillate placed singly and the staminate successive in clusters. Seeds are flat, much like small watermelon seeds but more wrinkled, black or brown-black. Tendrils have long slender branches. Leaves are large, angled or lobed, not hairy or pubescent as in the Cucurbitas.

Luffa acutangula. Species 11, *a,b.*

The less well known of the two cultivated species, recognized by the angled or shallowly lobed leaves, and the club-shaped fruits which bear ten marked sharp ridges. Gourds a foot or so long, mostly less as I have grown them, and two to three inches in diameter at the large end, sometimes short and only twice longer than broad. Seed about five-eighths inch long, pointed at one end, with blunt thick margins, the surface rough. The word *acután-gula* means acutely or sharply angled, in reference to the fruit ("pomis acutangulis," Linnæus, under the name *Cucumis acutangulus,* inasmuch as he did not consider these plants to constitute a distinct genus).

Luffa cylindrica. Species 12.

This is the common Vegetable Sponge plant, grown for the fibrous interior of the fruit that is prepared as a single sponge-like product and grown also as an ornamental vine. The leaves have deep narrow lobes, the terminal one usually being pronounced. Flowers are deep yellow. Fruit is cylindrical or nearly so to somewhat clavate, not ridged but bearing shallow furrows, often only one foot or less long, particularly attractive when hanging on a trellis; seeds flat with thin edge, not pointed on either end, smooth or at least not rough, three-eighths or four-eighths inch long. This is the plant commonly



THE SERPENT GOURD

known as Rag gourd and Dishcloth gourd, and Chinese Loofa. Large-fruited races may be grown for the sponges. At drugstores one may find the commercial product, pressed flat, eighteen or twenty inches long and four inches broad.

This is an abundant plant in diverse parts of the world, having made itself at home. I have known it about habitations in China, in ravines and on trees in Venezuela, in islands of the West Indies. It was known to Linnæus as *Momordica Luffa* and *M. cylindrica* (cylín-drica): we shall soon meet the genus Momordica as now understood. I have grown it under the names of *Luffa gigantea* (gigantè-a) and *L. marylandica.* The plant makes a good screen or arbor vine for late summer and autumn use. I have grown the showy pistillate flowers with a five-inch spread. The plant is annual.

SPECIES 13. TRICHOSANTHES ANGUINA

Forty or more species are included in the odd genus Trichosanthes, native in southern eastern Asia and Australia. One of them is an old cultivated plant, grown for its very long slender fruit, called Serpent or Snake gourd. The genus is known by the hair-like divisions of the corolla-lobes, wherefore Trichosán-thes, *hair flower.* The cultivated one is *Trochosanthes Anguina* (Anguì-na: Latin *anguis,* serpent), sometimes called *T. colubrì-na,* from *colubra,* a serpent.

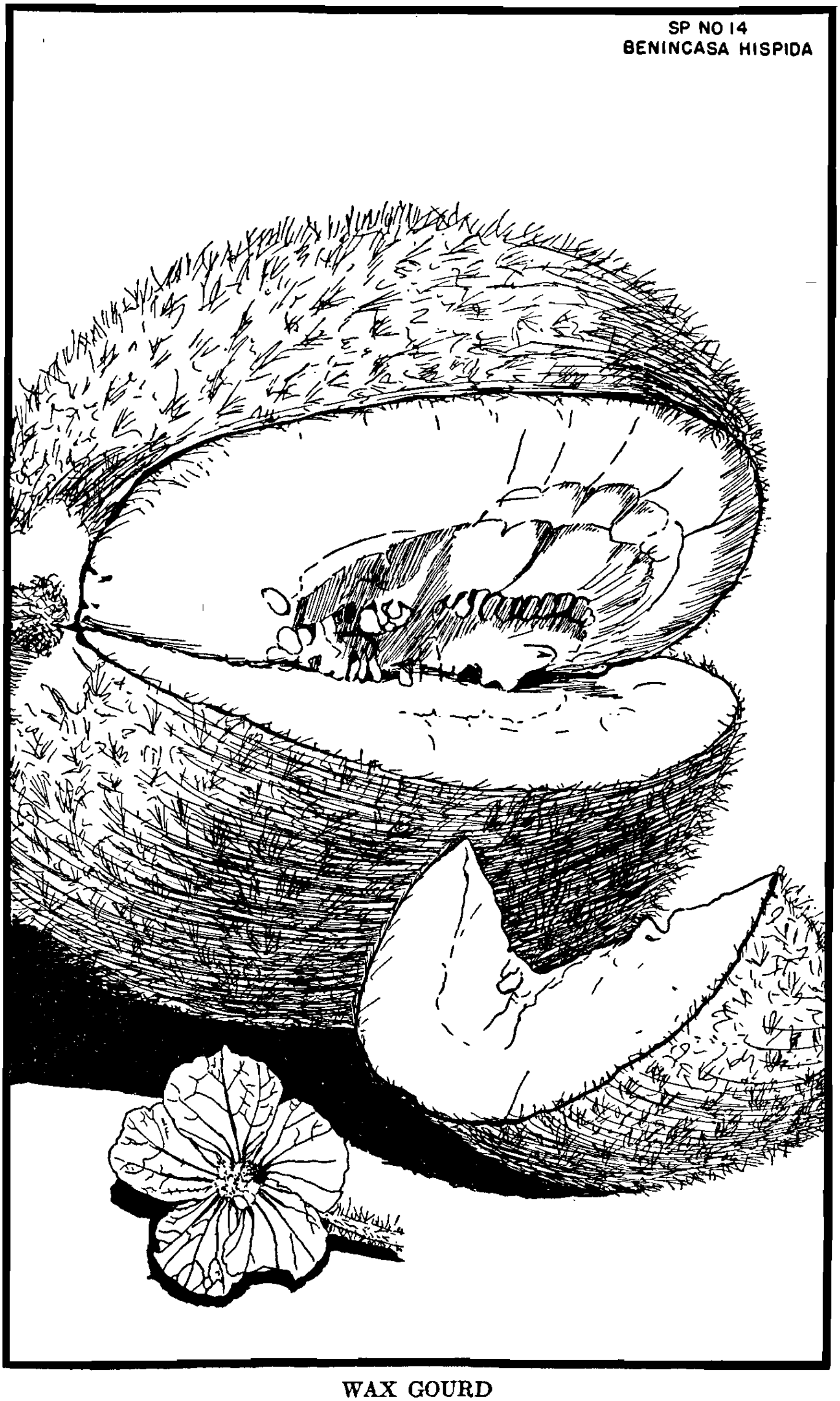
Snake gourd may be grown in the northern states, although one would not expect to raise very long fruits, perhaps not more than a foot or two. It is annual, requiring a long season. The foliage looks something like that of Luffa, but not so deeply lobed. Tendrils are two- or three-forked. Flowers are white, very deeply beautifully fringed, the staminate in peduncled clusters and the pistillate placed singly and nearly sessile.

Peculiarity of the fruit is the fact that it tapers to the long apex, in that respect differing from others described in this book and the end is curved or curled. The green slightly

ribbed fruit is edible and for this purpose it is grown in the tropics. With us it is raised for curiosity. In the open ground at Ithaca it yields small curved gourds, from ordinary commercial seed, about one foot long and an inch or two thick. Seeds are oddly angled, nearly flat but thick, tawny or light brown, one-half to five-eights inch long.

In his "Handbook of Tropical Gardening," published in Ceylon, H. F. Macmillan writes as follows: "A quick-growing climbing gourd, bearing long cylindrical, green (sometimes greenish-white) fruits, which not unfrequently reach the length of five to six feet. In an unripe state these pod-like fruits are sliced and cooked in the manner of French beans, being also rarely used as a curry vegetable in the low-country. Seeds are sown in the monsoons, either in rows in the open ground, or against low branching trees or shrubs. It is customary to suspend a small stone at the end of each fruit whilst growing, so as to weight it down and induce it to grow straighter, and perhaps longer, than it would otherwise do."

An interesting account of the Snake gourd was printed as long ago as 1804 in the Botanical Magazine, published in London; "The Snake-Gourd is a native of China, where its fruit is eaten. Was introduced into Europe about the year 1720, and seems at first to have attracted considerable attention from the singularity of its fringed flowers and snake-shaped fruit, which last is also curious from the rapidity of its growth. Was cultivated by Miller in Chelsea Garden, in the year 1755, who published a figure of it. . . . Like many other annuals which excite but a short lived curiosity, this plant soon disappeared, and perhaps there are few persons now that have ever seen it in this country, though it will produce ripe seeds with us if sown on a hotbed early in the Spring and treated in the same manner as cucumbers and melons."



WAX GOURD

SPECIES 14. BENINCASA HISPIDA

The Wax gourd is a profuse annual monœcious vine with cordate-ovate strongly angled hairy leaves, brown-hairy grooved stems, stout forked tendrils and large yellow solitary flowers that stand wide open. It is native in tropical Asia, and is widely distributed over the world in warm countries. It has been grown in North America erroneously as cassabanana, as that name belongs rather to *Sicana odorifera* (odoríf-era), a cucurbit not included in the present book. The name Benincà-sa commemorates an Italian nobleman.

Mostly the fruit or gourd or melon is short-oblong in form but not always as short as shown in the picture, six or eight inches long, but from Chinese seeds I have raised a cucumber-shaped fruit seven or eight inches long and two inches thick. Under good conditions and with well-chosen seeds, the fruits may be much larger than these dimensions. In a market in South America I have seen it offered by Chinese under the name "tunka." Peculiarity of the fruit is its whitish waxy covering like a bloom, whence its common name and also the more usual binomial, *Benincasa cerif-era*, the second word meaning "wax-bearing"; the name *cerifera* dates from Savi, the Italian, in 1818; but in 1784 Thunberg described it as *Cucurbita hispida* (hispid or hairy) in allusion to the thin hairy covering of the fruit, and under the Rules the earliest authentic specific name is brought over into Benincasa and we have *B. hispida.* The fruit may become nearly or quite free of hairs at maturity.

I am not aware that the plant is grown specially for ornamental fruit, but inasmuch as it is known in literature as a gourd it may find place in this book. The rind is not durable. The white flesh is employed in the East in curries and other cookery and is prepared as a sweetmeat. The seeds are white and flat, about one-half inch long, with slight ridge following the margin.

The plant is of simple cultivation on any good garden land in open exposure, but requires a long season for full product.

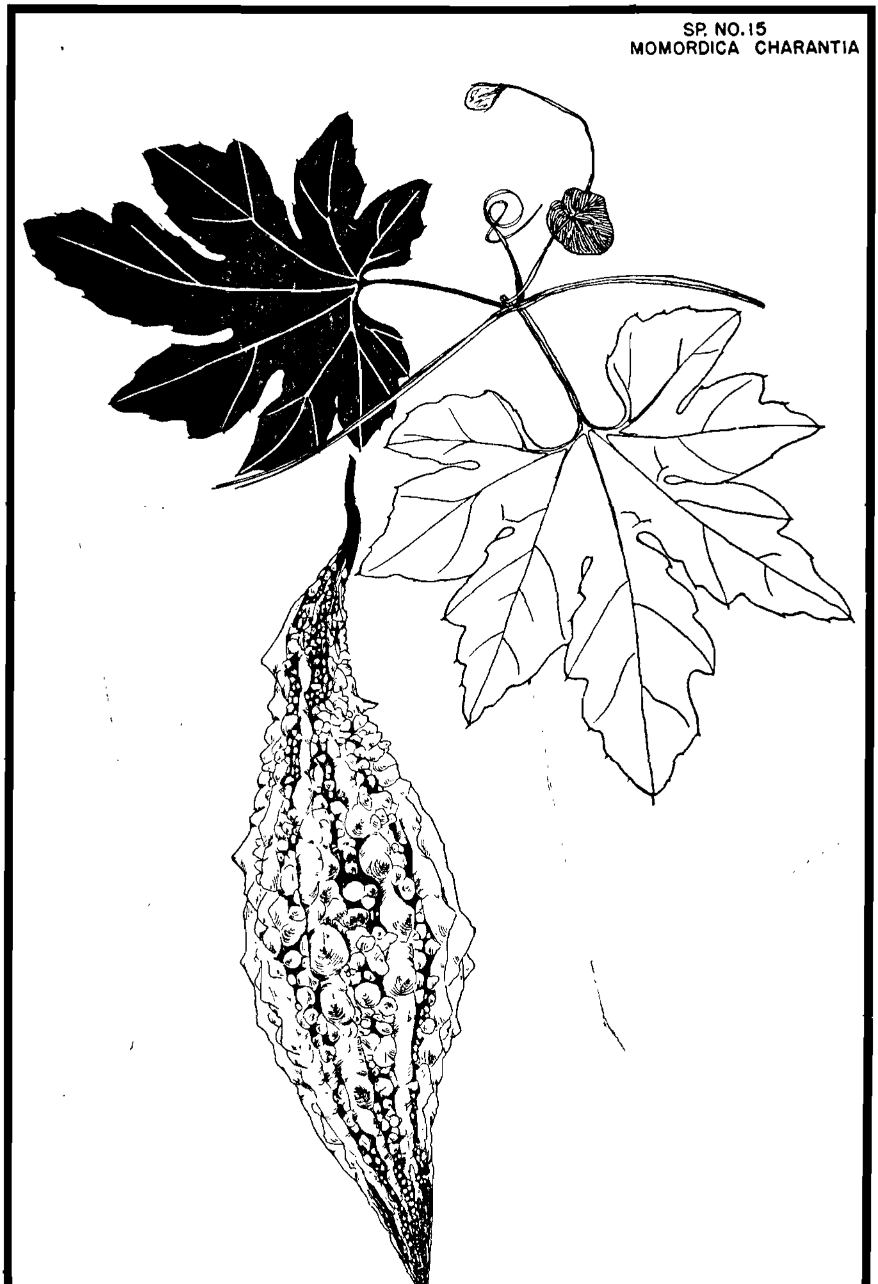
SPECIES 15, 16. MOMORDICA CHARANTIA and MOMORDICA BALSAMINA

We come now to a class of small-leaved screen, porch and arbor vines seldom if ever classed with gourds but nevertheless grown for the ornamental foliage and the odd highly colored bursting fruits. Of these particular plants there are two species to be had of seedsmen, as indicated in the heading. Something more than sixty species of Momordica are known in Old World tropics, with most of which we have nothing to do in this book.

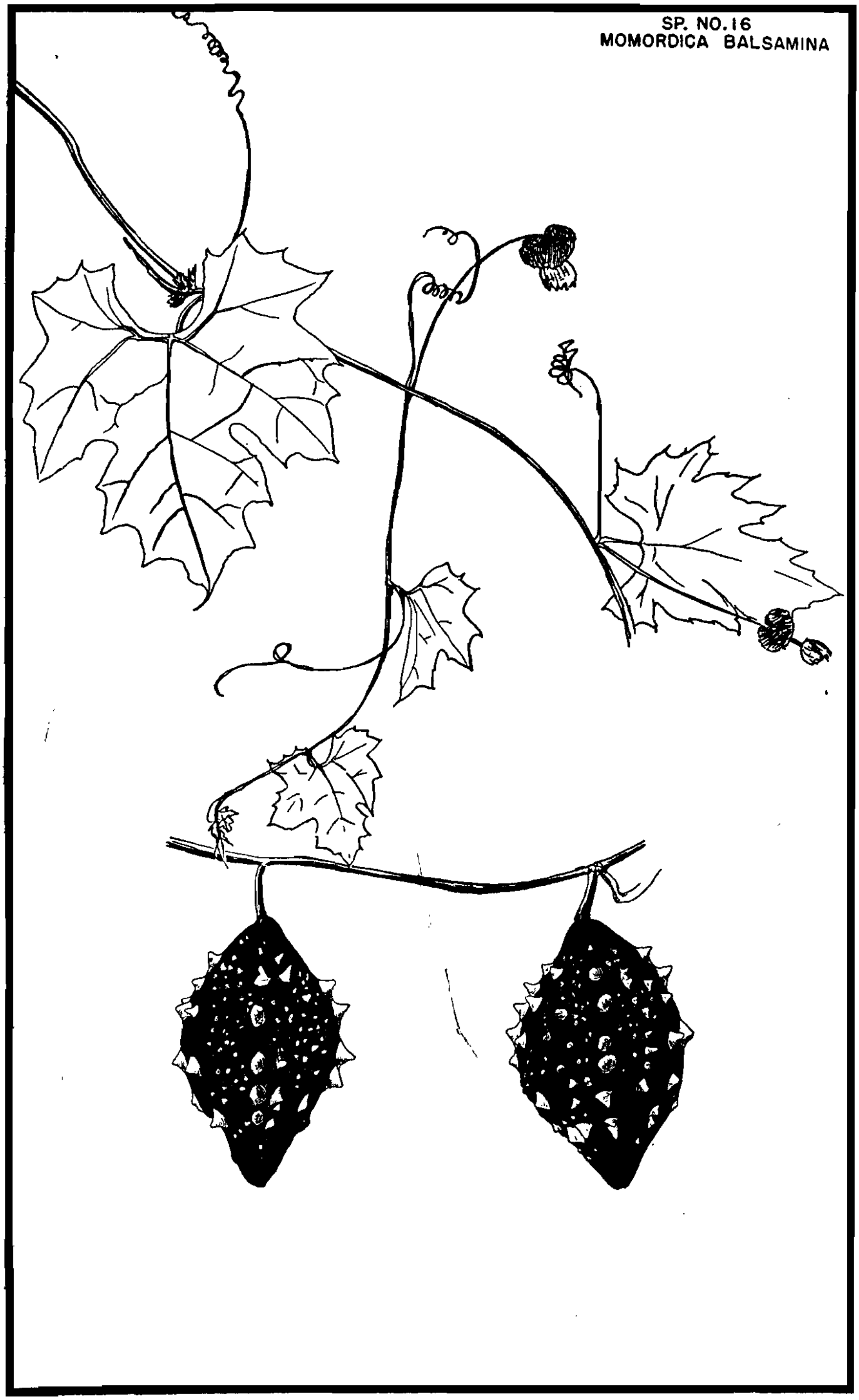
Peculiarities of the Momordicas are irregular and often jagged seeds, as if bitten, whence the name Momór-dica adopted by Linnæus, from a Latin verb *to bite*. The two species we are at present considering bear brown or tawny flat seeds about one-half inch long; those of Charantia are cornered and rather thick, margins jagged, surface sculptured with lines and patterns; those of Balsamina are flatter, not cornered or prominently jagged, surface marked with finer lines and figures.

The names Charantia and Balsamina (Charán-tia, Balsám-ina) may be accepted without much explanation, even though they seem odd. They are old vernaculars, used by the herbalists and were taken up by botanists when binomial (two-name) nomenclature came into use. The current vernaculars in English are Balsam-Pear for *Momordica Charantia* and Balsam-Apple for *M. Balsamina*, although one sees no significance in the present application of such names.

Both Balsam-Pear and Balsam-Apple are annuals of the easiest cultivation. They are tenacious tendril-climbers. Seeds may be placed in the ground as soon as the weather is settled and warm, and when frosts are no longer expected. The casual grower will not see much difference between the two kinds until they come into fruit, although leaves of Pear are mostly larger and more deeply lobed than of Apple. Differences are shown in the two pictures. The foliage is delicate and attractive, smooth, without the heavy coarse look of the pumpkin tribes.



BALSAM-PEAR



BALSAM-APPLE

Flowers are yellow or white, not large or particularly showy, borne on stalks or peduncles. On the peduncle of the staminate flower are circular bracts, and the position of these bracts is different in the two species. These positions are indicated in the two pictures. Those of Charantia are placed mostly below the middle of the peduncle, and those of Balsamina above the middle and often close to the flower or bud.

Fruits of the two species are very unlike, as the pictures testify. Those of Balsam-Pear (*Momordica Charantia*) are somewhat thick spindle-shaped, tapering from the middle to either end, warty or blistered, orange-yellow, four to eight inches long, bursting at maturity from the top (blossom) end so that only the basal or stem part remains on the vine, exposing the scarlet covering of the seeds. Those of Balsam-Apple (*Momordica Balsamina*) are much smaller and shorter, ovoid or ellipsoid, three inches or less long, mostly bearing points or protuberances but sometimes nearly smooth, orange.

Balsam-Pear is extensively run wild, as a canopy-weed on roadsides and over bushes, in the southern United States and the tropics. The other species appears not to have taken to the woods to any extent outside its native regions. Reasons for these differences in behavior have not been found out.

SPECIES 17. MOMORDICA COCHINCHINENSIS

A very different looking plant is this great rampageous perennial vine from southeastern Asia. It was given name and diagnosis by Loureiro, Portuguese missionary-priest, who published Flora Cochinchinensis in 1790 and designated the plant as *Muricia cochinchinĕn-sis* in recognition of its citizenship in his adopted country. Later, Sprengel concluded the plant belongs in the Linnæan genus Momordica and in 1826 he transferred the name. It is so unlike the Momordicas known in cultivation that we may doubt whether the plant really is in place in that genus, but this question need not be discussed on this occasion.

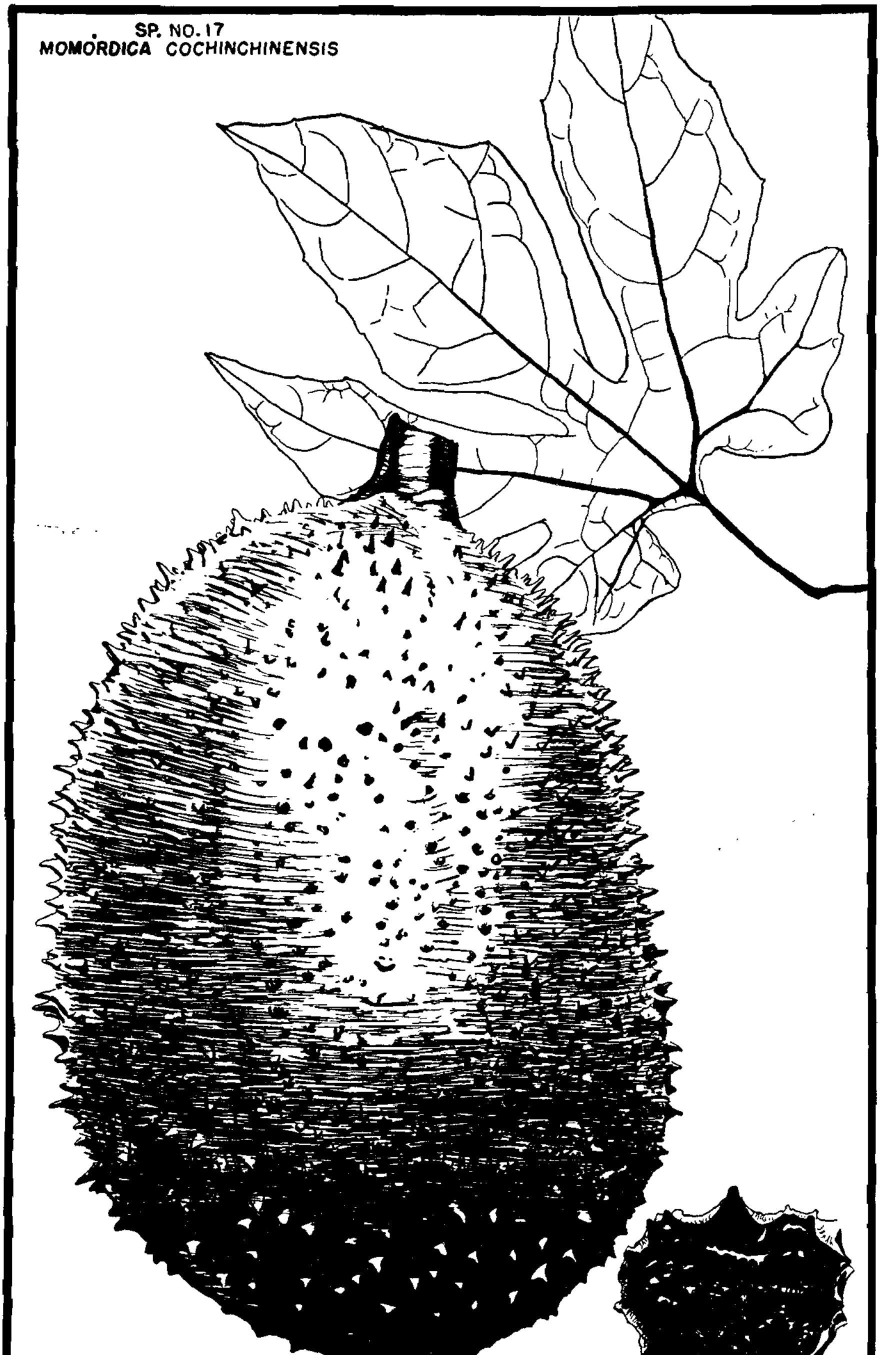
The Cochinchina gourd is a strong profuse climber, making a striking subject when grown on an ample trellis. It is seen as a planted subject in the tropics. I have grown it at Ithaca but it did not mature. The warty woody stems may become an inch in thickness. Leaves are large, usually with three main lobes, as seen in the picture, but the shapes are various. Tendrils are simple, becoming long and strong. The big white or creamy flowers may be several inches across, with veiny pointed lobes, the corolla with dark mark in bottom; calyx blackish. The bract on the peduncle is a folded or sheath-like inflated body, two inches long, in which insects collect.

The gourd is a densely tuberculate heavy ovoid body six to eight inches long, yellowish at maturity, with strong odor. Seeds are like flat irregular pieces of chocolate, often one and one-half inches across, one of which is seen in the picture about natural size. The entire plant in full growth looks unusual to cold-country eyes. The species appears not to be offered in the United States.

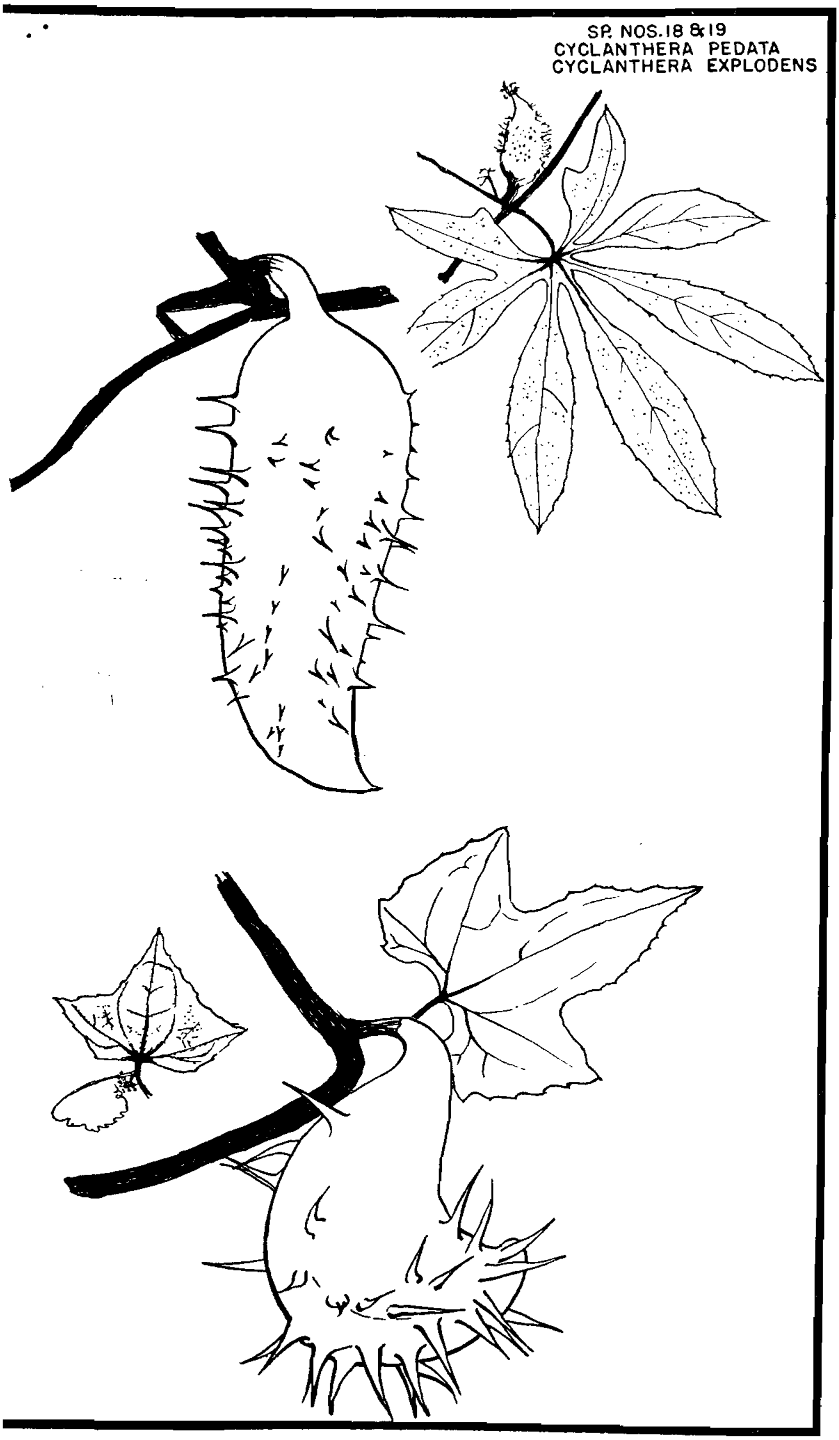
SPECIES 18 and 19. CYCLANTHERA

As slim and graceful as the Balsam-Pear and the Balsam-Apple are the two Cyclantheras (Cyclanthè-ra) of which one may purchase seeds and grow plants on a trellis or wire fence. The flowers are very small and of no ornamental value, but the odd prickled bladdery fruits add interest to the foliage display. They are native in tropical America, but I have grown them freely to maturity at Ithaca by planting seeds in the open garden in warm sunny exposure. They are tender annuals, or grown as such. These plants are related to the wild cucumber or Echinocystis of the United States which is so common as not to invite much cultivation.

The Cyclantheras are perhaps forty species, but I have grown only the two. One is *C. pedata* (pedà-ta) with pedate or bird-foot leaves of five lobes and the two lateral lobes again lobed. The oblong and pointed puffy fruits are about two

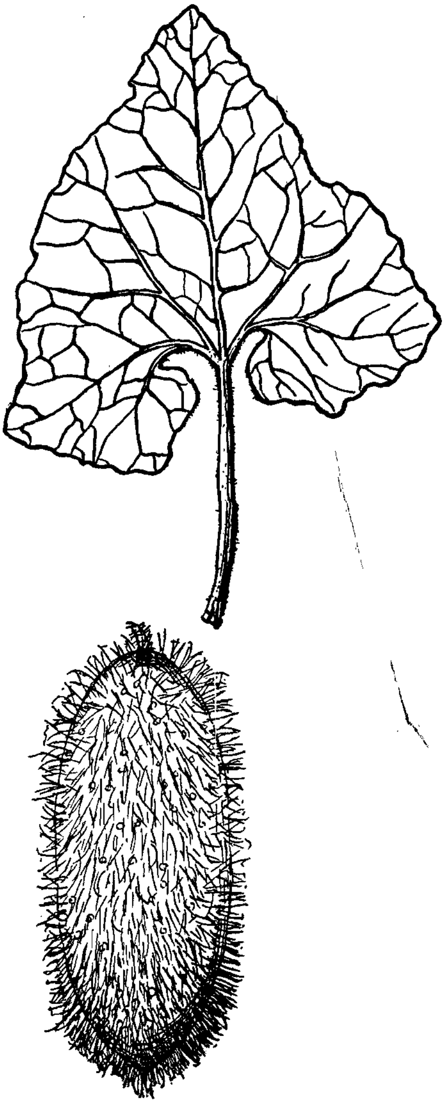


COCHINCHINA GOURD



THE CYCLANTHERAS

SP. NO. 20
ECBALLIUM ELATERIUM



SQUIRTING CUCUMBER

inches long, yellowish-white, soft-prickly on the upper part but not always to the apex; seeds so cornered and irregular as to appear shapeless and with a projection or lobe at one end, the largest one-half inch long, dull blackish. The other species is *Cyclanthera explodens* (explŏ-dens), so named because the spiny soft fruit with up-curved end explodes at maturity and liberates the dark brown or blackish shapeless scale-like notched seeds that may be three-eighths inch across either way. The fruit, shown at the bottom of the picture, is about two inches long and yellowish. Leaves of this species are smaller than of the other, angled or shallowly three-lobed. Both species climb rapidly by means of tendrils.

SPECIES 20. ECBALLIUM ELATERIUM.

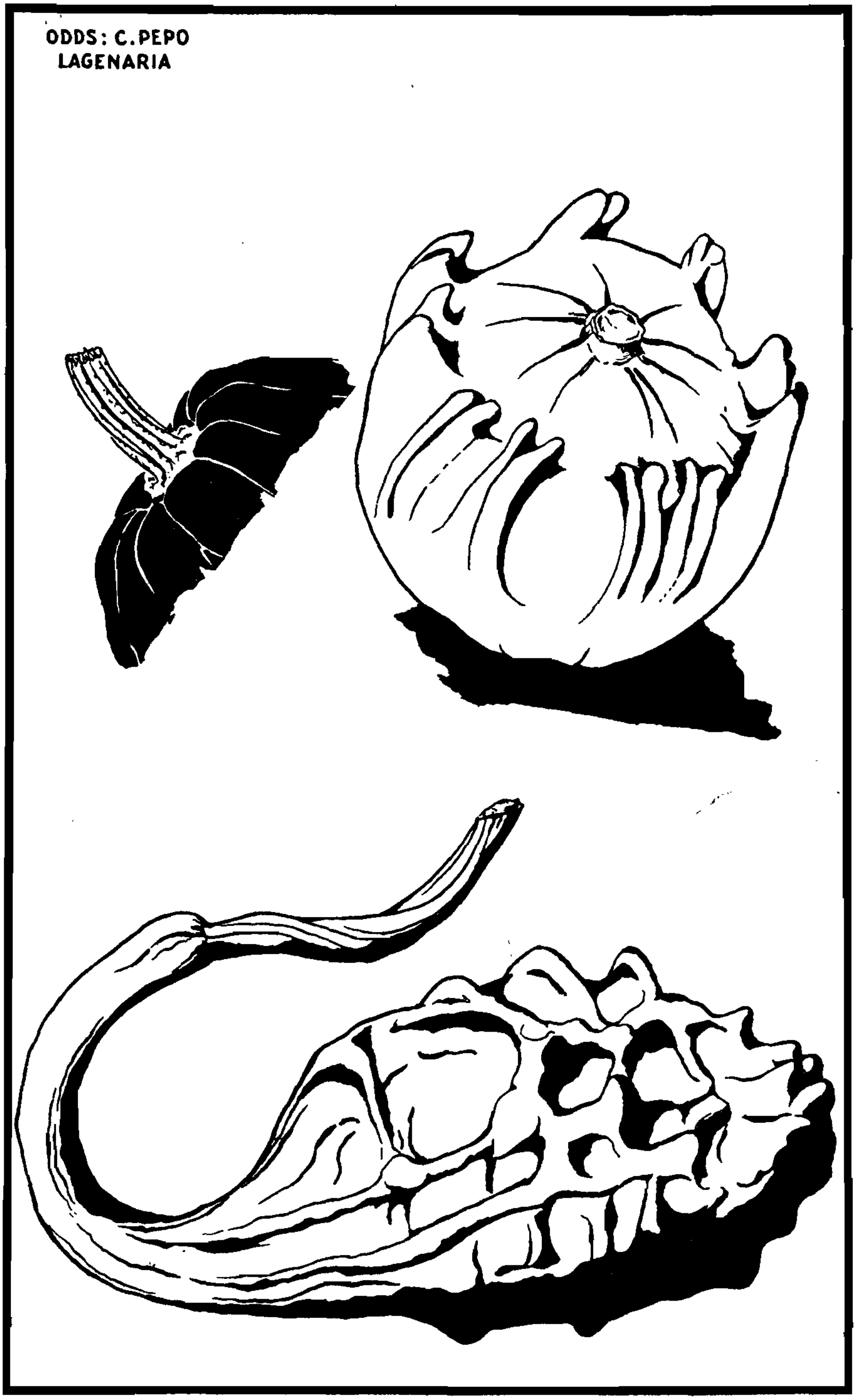
The Squirting cucumber is one of the oddities of the vegetable world. To begin with, it is not a cucumber, but its peculiarities are chiefly two—that it does not climb or have developed tendrils and yet is one of the Cucurbitaceæ, and that the ripe fruit forcibly ejects its contents from the stem end on the slightest touch when ripe and after it is detached from the plant.

Ecballium, of which there is only one variable species, is an herbaceous perennial although treated as annual in northern countries. It is native in the Mediterranean region. By Linnæus it was included in the genus Momordica as *M. Elaterium* (Elatĕ-rium), the specific name having come up from the herbalists and which, in origin, is associated with a Greek verb *to drive away*. Literature is replete in references to the plant, inasmuch as it yields elaterin, a product employed in medicine. The word Ecbăl-lium is from the Greek, *to throw* or *eject* or *cast out*. (There is a separate genus Elaterium, much like Cyclanthera, of which a dozen species may be collected in tropical America, but it is outside our present purpose).

The plant has a loose trailing or prostrate habit. The

foliage is gray because of the pubescent under surfaces; leaves cordate-triangular, on hairy-pubescent petioles; monœcious; flowers light yellow with darker center, open or rotate, one to two inches across, corolla-lobes veiny. Fruit bluish-green, oblong to somewhat ovoid, one and one-half to three inches long and about one-half as broad, roughly hairy, hanging or deflected on the peduncle; when picked at maturity it separates from the peduncle and from the peduncular scar the fluid contents and seeds are ejected, often to the discomfiture of the harvester, the fruit itself not collapsing; seeds brownish or blackish, somewhat tumid or swollen, mostly above one-fourth inch long.

The plant is not particularly attractive; flowers and fruits are borne under the foliage. As a curiosity and garden surprise the Squirting cucumber will retain its standing as a horticultural subject.



THE ODD FINGER AND MARANKA GOURDS

INDEX

Acorn squash, 31
Agrestis melon, 81
Alefeld, Friedrich, 41, 55
Angora gourd, 71
Apple gourd, 52

Balsam-Apple, 116
Balsam-Pear, 116
Banana muskmelon, 78
Bay State squash, 71
Bell gourd, 55
Benincasa hispida, 115
Bicolor Pear gourd, 56
Big Bell gourd, 55
Bishop's Mitre, 55
Bottle gourd, 99
Broad striped gourd, 59
Burr cucumber, 89

Calabash, 91
Calabazilla gourd, 65
Cantaloupe, 72
Cassabanana, 115
Cheese pumpkin, 51
Chili squash, 71
Chinese Loofa, 111
Chito melon, 78
Citrullus, 72
Club gourd, 100
Cochinchina gourd, 122
Colocynthis pyriformis, 35
Crown of Thorns, 16
Cucumber, 78
  Wild, 122
Cucumis acutangulus, 108
  Anguria, 82, 89
  dipsaceus, 82, 90
  Dudaim, 77
  erinaceus, 90
  flexuosus, 81
  Grossuluria, 90
  grossulariæformis, 90
  Melo, 72
  Melo var. *agrestis*, 81
  Melo var. *Chito*, 78
  Melo var. *Dudaim*, 77
  Melo var. *flexuosus*, 78
  Melo var. *texanus*, 81
  odoratissimus, 77, 89
Cucurbita argyrosperma, 72
  digitata, 51
  ficifolia, 71
  fœtidissima, 65
  Galeottii, 51
  hispida, 115
  lagenaria, 92
  leucantha, 92
  maxima, 51, 71
  maxima var. *turbaniformis*, 66
  melanosperma, 71
  mixta, 51
  moschata, 51, 65
  okeechobeensis, 60
  ovifera, 32, 41, 48, 52
  palmata, 51
  Pepo, 31, 32, 41, 48
  Pepo var. *mitriformis*, 55
  Pepo var. *oblonga*, 41
  Pepo var. *ovifera*, 32, 51, 52
  Pepo var. *subrotunda*, 41
  perennis, 65
  radicans, 51, 60
  siceraria, 92
  texana, 31, 32, 42
Cyclanthera explodens, 129
  pedata, 122

Dipper gourd, 100
Diseases of gourds, 15
Dishcloth gourd, 107
Dolphin gourd, 107
Duchesne, 92
Dudaim melon, 77
Dumb-bell gourd, 99

Ecballium Elaterium, 129
Echinocystis, 122
Egg gourd, 52
Essex squash, 71

Finger gourd, 16, 31

Gherkin, 89
Gooseberry gourd, 89
Gourd of the Ten Commandments, 16
Gray, Asa, 47, 81

Harms, 99
Hercules Club, 35, 100
Holy gourd, 16
Hubbard squash, 71

Indian pumpkin, 65
Insects attacking gourds, 15
International Gourd Society, 2

Kettle gourd, 100
Knob Kerrie gourd, 100

Ladle gourd, 59
Lagenaria leucantha, 92
  siceraria, 91
  vulgaris, 92

Lemon cucumber, 78
Lindheimer, Ferdinand, 82
Linnæus, 32, 48, 52, 77, 81, 92, 111, 116, 131
Lobel, 35
Loofa, 111
Loureiro, 121
Luffa, 107
  acutangula, 108
  cylindrica, 108
  gigantea, 111
  marylandica, 111
Lundell, C. L., 60

Macmillan, H. F., 112
Malabar gourd, 71
Mammoth squash, 71
Mango melon, 78
Maranka gourd, 107
Marblehead squash, 71
Mattioli, 36
Maxima squash, 71
Maximowicz, C. J., 82
Maximowiczia, 82
Melon, 72
  apple, 78
Miniature gourd, 59
Missouri gourd, 65
Mock Orange gourd, 55
Molina, 92
Momordica Balsamina, 116
  Charantia, 116
  cochinchinensis, 121
  cylindrica, 111
  Elaterium, 129
  Luffa, 111
Muricia cochinchinensis, 121
Muskmelon, 72

Naudin, Chas., 41, 60, 81

Okeechobee gourd, 60
Orange gourd, 55
  melon, 78
Ovifera gourd, 32, 51

Parkinson, John, 35
Pear gourd, 56
Peten gourd, 56
Petite de Chine, 66
Powder Horn gourd, 100
Pumpkin, 31, 32, 48

Queen Anne's Pocket melon, 78

Rag gourd, 107
Retort gourd, 100
Roemer, 41

Savi, 115
Scoop gourd, 59
Seringe, 41, 92
Serpent gourd, 111
Siamese gourd, 71
Sicana odorifera, 115
Sicydium Lindheimeri, 81
Siphon gourd, 100
Small Chinese gourd, 66
Snake cucumber, 78
  gourd, 111
Spoon gourd, 56, 59
Sprengel, 121
Squash, 31, 32, 48
Squirting cucumber, 129
Striped Pear gourd, 56
Sugar-bowl gourd, 16
Sugar-trough gourd, 107
Sweet Potato pumpkin, 51

Tabernaemontanus, 36
Table Queen squash, 31
Teasel gourd, 90
Texan gourd, 42
Thunberg, 115
Tillinghast, Helen M., 9
Trichosanthes Anguina, 111
  colubrina, 111
Trough gourd, 100
Tunka, 115
Turban squashes, 66
Türkenbund, 66
Turkscap gourd, 66

Vegetable orange, 78
  Sponge, 107
Vine peach, 78

Warty Hardhead gourd, 59
Watermelon, 72
Wax gourd, 115
West Indian gherkin, 89
White Pear gourd, 56
Winter Crookneck, 51

A 0295
3- JAN 1933